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A Statistical Inquiry

INTO THE

EFFICIENCY OF PRESENT-DAY METHODS OF

DIAGNOSIS OF ULCERS OF THE STOMACH AND DUODENUM,

AND INTO THE VALUE OF GASTRO-JEJUNOSTOMY IN THEIR TREATMENT.

BY ARCHIBALD YOUNG, M.B., C.M., B.Sc., F.R.F.P.S. GLASG.,

PROFESSOR OF SURGERY AND DEAN OF THE MEDICAL FACULTY, ANDERSON COLLEGE OF MEDICINE, GLASGOW; VISITING SURGEON, WESTERN INFIRMARY, GLASGOW.

With the Collaboration of

ANDREW J. HUTTON, M.B., CH.B. GLASG.,
ASSISTANT SURGEON, WESTERN INFIRMARY, GLASGOW,

AND

JOHN SCOULER BUCHANAN, M.B., CH.B. GLASG.,
SURGEON TO OUT-PATIENTS, WESTERN INFIRMARY.

ON the evenings of Dec. 3rd and 17th, 1920, there took place, in the Royal Medico-Chirurgical Society of Glasgow, an important discussion on the treatment of gastric and duodenal ulcer. Of the many points of interest and value which emerged in the course of the discussion this inquiry is concerned with two only: (1) the supposed inherent difficulty in, and the unreliability of, the diagnosis of these lesions; and (2) the efficacy or not of gastro-jejunostomy in their treatment.

So much at variance did I find myself with some of the views on these points expressed on the first evening of the discussion that, in the interval before resumption of the discussion on Dec. 17th, with the aid of my assistants, Dr. A. J. Hutton and Dr. J. Scouler Buchanan, I set on foot a careful inquiry into both subjects, in respect of all such cases seen and dealt with by us within the three and a half years immediately preceding. It was intended to lay the results of the inquiry before the Society at the second meeting, but the interval of time was not long enough for completion of the investigation or for adequate digestion of its results. These results are presented, therefore, for the first time in this paper. It was also intended to extend the inquiry to cases further back than the period mentioned, but the findings for the latter seemed to us so gratifying and so conclusive that such further investigation has not appeared to be necessary. Nor was it deemed advisable to include the considerable number of similar cases dealt with since December, 1921, as the period that has elapsed was too short to give reliable data as to the permanency of the effects of treatment.

METHOD OF INQUIRY.

When the inquiry was set on foot we felt uncertain how far, if at all, its results might be at variance with views expressed in the earlier part of the discussion. The inquiry was made in as impartial a manner as possible, and with the single desire to discover the truth as borne out by well-ascertained facts.

The first part of the inquiry consisted in a careful comparison in each case between the diagnosis made prior to operation and the actual finding at operation; or, in the cases not operated on, in as unbiased and judicial an estimate as possible of the most probable pathological condition present. The series included all those cases within the period mentioned, in which lesions of the stomach or duodenum were diagnosed, whether the diagnosis was verified at operation or not; it included, also, cases in which other lesions were suspected or actually diagnosed—such as cholecystitis, appendicitis, &c.—but which were proved at operation to be lesions of stomach or duodenum, or combined with these. The facts in this section of the inquiry were easily available in our records, which have been kept with care.

For the purpose of the second part of the inquiry a form of questionnaire was sent out to all patients included in the series except those who were known to have died. Replies were received from almost all to whom the communication was sent, and the conclusions were based on these replies. The nature of the questionnaire will be indicated later. Of course, there is, and probably always will be, both a medical and a surgical aspect of the subject; this inquiry is made largely from the surgical point of view. It is realised, too, in the case of ulcer either of stomach or duodenum, that the surgeon usually sees, and has to deal with, the chronic ulcer. Except where the ulcer perforates, or bleeds in alarming fashion, the surgeon seldom has to deal with the acute ulcer—not that the chronic ulcer does not also bleed and perforate; probably, indeed, most perforating ulcers are of the chronic variety. Still, a considerable proportion of the cases of perforation and of grave bleeding, as well as many cases of less severe bleeding, occur where there is present what would be properly termed an acute ulcer, and many of these cases, even now, the surgeon does not see at all. No doubt some ulcers, of the acute type at first, pass later into the state and class of the chronic ulcer, which the surgeon may see. But it seems probable, and it is generally accepted, that many ulcers of stomach and duodenum are of the chronic class from their inception. It is no part of the purpose of this paper to discuss the factors which determine the variation in type. The matter is mentioned merely as indicative of our appreciation of the fact that our conclusions have only a limited application. Within the limits set, however, we believe they are of some value.

DIAGNOSIS OF ULCERS OF STOMACH AND DUODENUM.

Much stress has been laid, in medical and surgical literature, on a supposed inherent difficulty in the diagnosis of these lesions, and the emergence of this idea, in the course of the discussion referred to at the beginning of this paper—with the reflection it implied on the efficiency and reliability of present-day methods of investigation—suggested to us the advisability of looking into our statistics, to see what support or otherwise they might give to such a despondent view. In the course of the discussion Dr. G. Herbert Clark pointed out how ample were the means at the disposal of the physician and surgeon in the way of investigation, and indicated how real and reliable were the available aids to diagnosis. One speaker had stated that the results of physical tests and chemical methods were frequently wrong. Dr. Clark maintained, on the other hand, that the results were accurate; it was the deductions that were inaccurate. Our view, in fact—borne out, we submit, at least substantially by our statistics—is that, in the main, a tolerably accurate diagnosis can be made differentially between these and allied lesions.

For the purpose of the inquiry we have taken all the cases occurring during the three and a half years immediately preceding the date of the discussion, in which definite symptoms suggestive of lesions of stomach or duodenum were present, or in which, for whatever reason, such lesions were suspected, whether operation proved their existence or not. Also, we have included such cases as may have been diagnosed otherwise, but in which operation disclosed a lesion of stomach or of duodenum not previously suspected. The series includes 110 cases, which we have classified in groups, each group-title representing the diagnosis made—not necessarily the lesion found at operation or finally accepted as the correct diagnosis.

It is not intended to enter into any discussion of the details of the methods on which we depended in the making of our diagnosis in any of the cases, nor, indeed, to refer to these methods at all. They were just such as are at the disposal of any careful observer,

and included the usual careful physical examination, chemical and physical tests, as well as X ray methods. We would like to add, however, that we attach great importance to a very searching and discriminating consideration of the clinical history in every case. We make no apology for confining our inquiry strictly to the purely statistical aspect of the matter. That is, indeed, the purpose of the paper. If we can show that, as a matter of fact, an approximately or actually correct diagnosis was arrived at in a very large proportion of the cases included in the series, it seems to us that we have proved our case—viz., that we possess, in present-day methods—clinical and chemico-physical—efficient and, on the whole, reliable means for the accurate investigation of these cases.

It may here be stated that it is our custom to endeavour to make a definite diagnosis prior to operation, if there is one; and in any case where doubt remains after consideration of all the available facts, to note that doubt. The cases are studied and generally discussed with some care, and at least a tentative diagnosis is put forward. That being our custom in the wards, it follows that we have, in the records of the ward journals, with, on the one hand, the pre-operation diagnosis, and, on the other, the operation finding, in each case a fairly useful basis for the statistical inquiry made.

The diagnosis made in each of the 110 cases may be shown in tabular form thus:—

	Cases.
Gastric ulcer	9
In these no other lesion was suspected.	
Pyloro-duodenal ulcer	38
This group includes ulcers situated at or about the pylorus, whether beginning as ulcers of the stomach or ulcers of the duodenum, and, on the stomach aspect, affecting either lesser or greater curvature. We have long recognised the group as quite well-defined, easily differentiated clinically. We commonly speak of them as P.D.U.	
Duodenal ulcer	21
Here we include only ulcers diagnosed as involving the duodenum by itself. It will be observed that it is a much smaller group than the foregoing.	
Cancer of stomach, &c.	26
In this group cancer was definitely diagnosed or strongly suspected.	
Pyloro-duodenal ulcer or cancer	6
Here it was recognised that the diagnosis, as between a chronic ulcer of the pyloro-duodenal region and cancer, was doubtful.	
Visceroptosis, &c.	4
Stenosis of the pylorus (congenital)	1
Gastritis of simple nature	1
Adhesions after gastro-jejunostomy (two years before)	1
Cholecystitis, gall-stones, and probable duodenal ulcer	1
Cholecystitis, gall-stones (no P.D.U. suspected)	1
Appendicitis, acute (perforation diagnosed)	1

These groups may now be considered in more detail, showing what correspondence there was between the diagnosis, as made, and the definitely ascertained or probable lesion.

Nine Cases Diagnosed as Gastric Ulcer.

These cases may be further subdivided as shown in tabular form below. Considering this group as a whole, it is seen that of the 9 cases, 5 were submitted to the test of operation; the diagnosis of the lesion and of its location proved correct in 4, while in 1 case the ulcer was found in the duodenum. The physician had diagnosed it as gastric, but the probable error was suspected prior to operation, after perforation had occurred. Of the remaining 4 cases one was observed for a considerable time, and the diagnosis, agreed to by physician and surgeon, may be accepted as reasonably correct. In 2 other cases, both occurring in women, operation was impossible, but they were almost certainly cases of gastric perforation. In the 1 remaining case the after-course supported the diagnosis of a "pinhole" perforation of a gastric ulcer. So that though only half of the cases were actually proved by operation to have been diagnosed correctly, a more careful survey of the whole of the cases in the group seems to justify our claim that in 8 out of 9 cases the diagnosis was probably accurate. And in the ninth case the error was appreciated or at least more than suspected prior to operation.

	Cases.
With perforation of ulcer and free peritonitis	2
In one the diagnosis was correct; in the other the location of the ulcer proved to be duodenal. The case was diagnosed as gastric in the medical ward, but after perforation had occurred the signs were judged to be suggestive of a duodenal rupture.	
Without perforation of ulcer	3
One not operated on, but diagnosis agreed to by physician. Two cases confirmed at operation; in one of these diagnosis of concomitant aneurysm of abdominal aorta also confirmed at operation.	
With grave hæmorrhage—ulcer of lesser curvature diagnosed	2
One confirmed at operation—incomplete perforation, coronary artery exposed, and perforated in the floor of the ulcer; in the other case the patient was in extremis and operation was not considered advisable.	
Doubtful perforation of gastric or P.D.U.	1
Patient in extremis; died one hour after admission to hospital; no post mortem.	
Doubtful "pin-hole" perforation of gastric ulcer or acute dilatation of stomach	1
After drinking bout; no operation; recovery after course suggesting a local peritonitis consistent with a "pin-hole" perforation.	

Thirty-eight Cases Diagnosed as Pyloro-Duodenal Ulcer.

In this group perforation had occurred recently in 8, being confirmed by operation. The remaining 30 included 26 cases in which operation confirmed the diagnosis as to condition and location. In 2 cases there was no operation (not advised, 1; declined, 1). In the other 2 cases the diagnosis was not upheld by the operation-finding (visceroptosis, 1; chronic appendicitis and cholecystitis, 1).

Considering this group as a whole it may be reasonably claimed that out of the 38 cases the presence of pyloro-duodenal ulceration, as diagnosed, was proved by operation in 34, though in 1 of these the ulcerative process was found to be, or to have become, cancerous. Both cases not operated on were almost certainly correctly diagnosed, more particularly the case in which operation was advised but declined; the whole clinical picture was beyond dispute and confirmed by X ray tests. It seems quite fair, therefore, to claim 36 correct diagnoses out of 38.

	Cases.
With recent or recurrent perforation of ulcer	8
All confirmed at operation as to the presence of pyloro-duodenal ulceration, but in 1 case of the 8 the ulcerative process proved to be, or to have become, cancerous. One case had perforated previously (two years before—said to have been of stomach then). The fresh perforation was just to duodenal side of pylorus.	
Without recent perforation of ulcer	30
In 26 operation confirmed the diagnosis. In 2 operation was either not advised or declined. In 2 operation negatived the diagnosis.	

Twenty-one Cases Diagnosed as Duodenal Ulcer.

This group contained 14 cases of perforation, and 7 in which perforation had not occurred. Of the former, 10 cases were found to be definitely duodenal; in 4 the perforation was found to be pyloro-duodenal. In the 7 cases in which perforation had not occurred, operation proved the correctness of diagnosis in 4. The remaining 3 were not operated on—in 2 cases because the symptoms and signs were, though fairly characteristic, not regarded as urgent; in the third because the depletion of blood, from repeated hæmorrhages, seemed to make operation too great a risk. This patient had had an operation previously, some years before, elsewhere—probably gastro-enterostomy—on account of similar symptoms; the clinical picture in this case was unmistakable.

Surveying the whole group, it appears that of the 21, diagnosed as cases of duodenal ulcer, the correctness of diagnosis and location was established

at operation in 14. In 3 out of the 21 there was no operation, but all the facts pointed, almost beyond dispute, to correct diagnosis. In the remaining 4 cases, operation disclosed an ulcerative process not strictly duodenal in location, but more extensive, involving the pyloro-duodenal region. Even this error of, at most, 4 out of 21, and implying only a slight spread of the ulcerative process, can hardly be said to constitute a serious defect in diagnosis.

	Cases.
With recent perforation	14
In 10 confirmed as duodenal at operation. In 4 proved to be pyloro-duodenal by operation.	
Without recent perforation	7
In 4 confirmed as duodenal at operation. In 3 no operation; in 2 of these, symptoms not urgent, but clinical picture characteristic; in the 1 case remaining, diagnosis practically certain, but confirmation by operation negatived by severity of hæmorrhages.	

Twenty-six Cases Diagnosed as Cancer of Stomach.

This group includes a majority where the definite diagnosis of cancer was made, and several cases in which this diagnosis, although not absolutely definite, was so probable as almost to amount to certainty. In this group the element of uncertainty can never be entirely eliminated; there must always be cases in which it can only be said that there is a strong—perhaps a very strong—suspicion of malignancy. In 15 cases out of the 26 the presence of cancerous ulceration, in varying stages of development, was demonstrated by open operation. In 7 of the 26 operation was not carried out. In 2 of these the condition was too advanced to admit of any form of operative interference; one died within a week, the other within a few hours of being seen. In the other 5 of these 7 cases operation was refused; in 4 of these, however, the clinical picture was absolutely characteristic, and a fatal issue was not long delayed. In all 4 there was definite tumour, with evidences of spread to the liver, &c.—so that the diagnosis cannot be considered doubtful. In the fifth case there was some doubt; malignancy was definitely suspected, but the possibility of a cholecystitis had been considered. The patient reported, two years after refusing operation, that she was quite well, had gained weight, and had no longer any symptom; so that it may be admitted that, in this case, a diagnosis of cancer of the stomach was not justified.

There remain 4 cases in which operation was carried out, but in which it disclosed no sign of cancer, though a diagnosis of probable cancer had been made prior to operation. Two of these 4 cases showed well-marked, more or less active, pyloro-duodenal ulceration, with stenosis of the pylorus, &c. In 1 case there were found some adhesions about the pylorus, and dilatation of the stomach, but no sign of any recent ulcer of the region. In the remaining case the finding of a definite cancer was confidently expected; the symptoms and signs were thought to be most suggestive of it. Nevertheless, no evidence of cancer was disclosed at operation; chronic appendicitis, tuberculous glands in the mesentery, some dilatation of the stomach, and other evidence of old pyloro-duodenal ulceration were found. Thus:—

In 15 cases diagnosis confirmed at operation.
In 7 cases no operation.
Of these, operation not possible in 2, but condition unmistakable; in 4, operation advised but refused; clinical picture, however, characteristic, and fatal issue not long delayed; in 1 case diagnosis not clear, but aftercourse, as reported on two years later, indicated that the condition was not malignant.
In 4 cases operation did not confirm correctness of diagnosis.
Two proved to be simple pyloro-duodenal ulcer; 1 showed pyloric adhesions, &c.; 1 showed a complex condition, involving appendix, stomach, glands, and duodenum.

A general survey of this group of 26 cases, in which a definite or probable diagnosis of cancer of the stomach had been made, shows that the diagnosis was certainly correctly made in 17 (15 confirmed by operation, with the 2 in which operation was impossible but the condition unmistakable); it seems justifiable, indeed, to assume that the diagnosis was probably correct in 21 out of the 26 (i.e., adding to the 17 the 4 in which, though operation was declined, the clinical picture was characteristic); that, finally, the diagnosis was incorrect in 5 out of the 26 cases (4 proved, at operation, to be simple, and 1 in which operation was advised but refused, but in which the subsequent history disproved the diagnosis of malignancy).

Perhaps the most striking point in connexion with this group is this—that in all four cases where the diagnosis was proved at operation to be erroneous, the confusion was with a condition of chronic pyloro-duodenal ulceration. Probably such a condition may pass, not infrequently, into the malignant phase. Again, chronic pyloro-duodenal ulceration, especially where it affects the lesser curvature in the region of the pyloro-duodenal junction, is often marked by great inflammatory thickening, amounting often to considerable "tumour" formation. Indeed, even at operation, it is not infrequently difficult enough to say definitely whether a pyloro-duodenal mass is inflammatory or of the nature of a new growth. It may be noted, too, that in all 15 cases where operation confirmed the cancerous nature of the condition, the disease was already well advanced by the time operation was carried out. In 2 of the 15 the cancerous process was located primarily on the lesser curvature of the stomach; in 1 case, what was thought to be the prime seat was located on the posterior wall. In 6 cases the pyloric segment was primarily involved; in the remaining 6 the disease was already so far advanced that no more than a guess could be made as to the probable primary seat of origin. Unfortunately, not even yet does the surgeon often see these cases early enough.

Six Cases Diagnosed as Pyloro-Duodenal Ulcer or Cancer.

In contrast with the last group, in which cancer was definitely diagnosed or strongly suspected, but in which 4 cases proved to be simple, this group comprises 6 cases in which, while no definite diagnosis was made, the possibility of cancer could not be excluded, though there seemed to be a fair probability of the lesion being simple. The group may be said to comprise two subgroups: (1) Three cases in which the test of exploratory laparotomy was applied; (2) three cases in which operation was recommended, but was declined. In the first subgroup were 2 cases in which, even at operation, the diagnosis remained in doubt; what was thought to be extensive chronic ulceration was found, involving the lesser curvature of the stomach and the region of the pylorus, with definite and considerable "tumour"; also a case, operated on by a former assistant, who reported that he found a condition very similar to this. The former 2 cases are reported on now, after three years, as completely well; the third case was operated on only six months before this inquiry was made, and is reported to be greatly improved. In the second subgroup, in which no operation was carried out, one patient reports himself as quite well after 17 months; a second, seen a few days before this inquiry, is apparently much better after a prolonged rest, holiday and simple treatment. He has gained weight and his strength has improved. He has now no symptoms of special note. The third case of this subgroup was seen two years ago; this is one of the very few cases in which no reply to the questionnaire has been received. Thus:—

In 3 cases exploratory operation carried out.
In all 3 chronic ulceration with "tumour"; all well to-day, 2 after three years, 1 after six months. Even at operation cancer not clearly negatived, but subsequent course rules it out conclusively.
In 3 cases operation advised but declined.
One patient well after 17 months; 1 patient apparently well after seven months; the third not traced.

A consideration of this group seems to bring out one rather remarkable feature—viz., that where the diagnosis as between chronic pyloro-duodenal ulceration and cancerous ulceration is doubtful, the odds

seem greatly in favour of the non-malignant lesion Certainly in 5 out of the 6 cases the subsequent history appears to have pretty conclusively proved the simple character of what had been regarded as quite possibly a malignant condition. In 3 of the cases, even at operation, it was not possible by actual inspection and palpation altogether to exclude cancer, but the lapse of time would seem in them, as in the 2 cases not operated on that have been traced, to have finally proved their non-malignancy. This feature, brought out by consideration of the cases in this group, is of interest and importance as emphasising the great value of a right estimate of the probabilities in surgical diagnosis.

Four Cases Diagnosed as Visceroptosis, including Gastroptosis.

The following are the details of the cases in this group :—

One, general ptosis suspected, with probable gall-stones.
Ptosis confirmed at operation; gall-stones found and removed.

One, general ptosis diagnosed, with possible cancer of stomach.
Operation disclosed general ptosis of stomach, &c., but no cancer.

One, general ptosis diagnosed, including gastroptosis.
Had been operated on three years previously for floating kidney; no further operation advised at this time, but operation required a year later for appendicitis.

One, general ptosis diagnosed, including gastroptosis and nephroptosis; also congenital cystic kidneys.
Operation confirmed the diagnosis, but also disclosed the half-suspected presence of cholecystitis; for the latter the gall-bladder was drained.

In all four cases, then, ptosis of stomach and other organs had been correctly diagnosed. In one case only had there been a suspicion of cancer; this was negatived by operation. In none of the 4 cases was any evidence of gastric or duodenal ulcer found at operation.

One Case Diagnosed as Congenital Stenosis of Pylorus.

This case was that of a young child of 3½ months; operation disclosed no organic stenosis. The stenosis was probably spasmodic. The case is included in the series of cases dealt with in the critical survey of this paper as falling within the category and period. It may be noted, however, that it is, somewhat curiously, the only case within the period in which we have had occasion to make the diagnosis quoted, though in the years before and since the date-period marked for this inquiry we had occasion to see, and to deal surgically with, several cases of congenital hypertrophic stenosis of the pylorus; and in none of these was the diagnosis either difficult or erroneous.

One Case Diagnosed as a Pure Gastritis.

The patient, a young woman of 34 years of age, had had recurring symptoms for several years, but without any definite indications of ulcer. Her condition improved greatly under simple treatment, and when heard from a year later she reported herself as having continued well from the time she was under observation by us.

This happens to be the only case seen by us and recorded as a stomach case without indication of ulcer, but with some of the clinical effects common to ulcer as well as to simple stomachic disorder without ulcer. (The cases of gastroptosis come into another category, of course.) The physician and the medical wards would tell a different story. These records, it cannot be too clearly understood, are those of the surgeon and of the surgical wards.

One Case Diagnosed as Abdominal Adhesions, Two Years After Gastro-jejunostomy.

In this case medical treatment was advised and the patient reported "well" a year after.

One Case Diagnosed as Cholecystitis, Gall-stones, and Probable Duodenal Ulcer.

Here operation confirmed the correctness of the diagnosis, except that no active ulcer was found; old adhesions, however, were found between duodenum and gall-bladder.

One Case Diagnosed as Cholecystitis with Gall-stones.

The findings in this case were as follows :—

The gall-bladder condition and the presence of gall-stones were confirmed by operation; it was found, however, that there was also old pyloro-duodenal ulceration with resultant stenosis of the pylorus. Both lesions were relieved by operation, the one by cholecystostomy and drainage of the gall-bladder, and the other by gastro-jejunostomy.

One Case Diagnosed as Acute Appendicitis, with Perforation.

The findings in this case were as follows :—

Operation proved the diagnosis to be wrong, there being no appendicitis, but, in fact, a perforated duodenal ulcer. This was sutured and drainage was established. The patient did well and reported as "very well" two years later.

It seems worthy of special remark that this is the only case, occurring under our observation during the period under review, in which a duodenal perforation was mistaken for an appendix lesion. The case was seen after perforation had occurred, indeed some time after. And it is well known that, under these conditions, confusion must occasionally occur. So well recognised is this that one is constantly on the look-out for such a possibility, but as often happens with a patient very gravely ill after a perforation, and perhaps unable, either personally or through friends, to give anything like a clear history of the crisis or of the antecedent symptoms, the nature of the perforation must often be in some doubt, and mistakes will probably always take place occasionally. That in this series, containing, as it does, 21 cases diagnosed as duodenal ulcer, in 14 of which perforation had occurred, only this one case was wrongly diagnosed as being of the appendix, seems to us to support, rather than to discredit, our thesis that the diagnosis of these lesions can be made, as a rule, with a much greater degree of assurance than many writers and speakers would seem to be prepared to admit. It is worthy of note that the series contains no example of the converse error—i.e., in no case during the period covered by this inquiry did we operate on a patient for a supposed duodenal perforation and find the perforation to be of the appendix.

SUMMARY OF THE FOREGOING.

A survey of the 110 cases included in this somewhat limited but comprehensive series, as borne out by the details given in the more fully recorded digest above, shows that the diagnosis was correctly made in 94 cases. Of the 16 cases in which the diagnosis was not correct the error was not uniformly serious or material. Indeed, in some cases it was not easy to say that the term error ought to be applied to the discrepancy between the diagnosis made and the operation finding. Thus :—

Of 9 cases diagnosed as simple gastric ulcer, only 1 case was wrongly diagnosed, and even that one was recognised as duodenal (after perforation) prior to operation.

Of 38 cases diagnosed as pyloro-duodenal ulceration, only 2 were proved erroneously diagnosed, one being general visceroptosis, including gastroptosis, the other a case of cholecystitis and chronic appendicitis.

Of 21 cases diagnosed as definitely duodenal ulcer, 4 proved to be of another nature, but the error here could not be said to be of a serious order, the condition in all 4 being merely more extensive in location, and involving the pyloric region as well as the beginning of the duodenum—i.e., pyloro-duodenal ulceration instead of purely duodenal.

Of 26 cases diagnosed as certainly or probably cancer of the stomach, in only 5 did the diagnosis prove to be unjustified. In 4 of these 5 cases operation disclosed pyloro-duodenal ulceration (in one of them, complicated by other lesions); the remaining case, in which there was no operation, had an aftercourse which suggested that it was of the same order. At any rate, 5 cases only out of 26 diagnosed as certainly or probably malignant, proved to be non-malignant—not a very large or serious error, especially when put alongside the fact that in only one case out of the whole 110 was a malignant condition found where a simple condition had been diagnosed.

One case of supposed congenital stenosis of the pylorus was found to be of a simple spasmodic nature.

In one case of cholecystitis, with gall-stones, where duodenal ulceration was also suspected, there was no direct

evidence of the latter at operation, though some adhesions were found between duodenum and gall-bladder; while in another case of the same nature pyloro-duodenal ulceration was found where it had not been previously expected.

The remaining case of error was the last mentioned in the detailed report—viz., the case of perforation, in which the site of perforation had been diagnosed as in the appendix, but proved to be duodenal; no case of the converse error occurred in the series.

These, then, are the facts of this somewhat limited but at least tolerably comprehensive and illustrative series of 110 cases. As given above in detail, they are stated, to the best of our ability, in as fair and judicial a fashion as possible. The records on which they are based have been taken at face value, and we have desired to present them as accurately and fairly as possible, with no attempt to strain any point, or to claim as correct any diagnosis not fully borne out either by evidence disclosed at operation, by clinical signs and symptoms, or by ascertained facts of after-history. A sincere effort has been made to get at the real truth of the matter in every case, and we do not wish to claim more for the result of our inquiry than the undoubted facts and dispassionate weighing of the probabilities seem to justify. We submit the facts with a certain degree of confidence that they go a good way to justify our claim that the ordinary methods at the disposal of physician and surgeon, in the diagnosis of ulcers of stomach and duodenum, furnish, in almost every case, efficient and reliable means for recognition and differential diagnosis of these conditions, and that the fraction of error should generally be trifling. And we agree, in the main, with the contention of Dr. Clark, already quoted, that where error in diagnosis does occur, it is seldom or never due to any defect in the methods of investigation, physical, chemical, and clinical, at our disposal, nor to the erroneous or unreliable results of these tests, but almost always to inaccuracy in the deductions made therefrom.

Gastro-jejunostomy in the Treatment of Gastric and Duodenal Ulcers.

It has already been stated that, for the purpose of this part of our inquiry, we took steps to ascertain the later history of all the cases included in the series; this applied, therefore, to cases of cancer, as well as to the few cases of other conditions wrongly diagnosed. The questionnaire issued brought the information desired, and the replies were expressed in such a way as to greatly enhance the value of the evidence. We felt that in no other way would it be possible to say that the conclusions drawn were beyond suspicion. We might have relied on such information as was, in many cases, already at our disposal, such as our own records of the more immediate after-history. We might have supplemented such information by personal examination of whatever cases could be easily recalled for the purpose. As a matter of fact, we had evidence of this kind in many cases, and it served to confirm our new reports. But we felt that the only facts that would be accepted as completely credible were those derived directly from the patients themselves.

It will be seen presently that the questionnaire was very simple. Accompanying the form sent out was a circular letter couched in friendly fashion, but asking for nothing more than a plain and unvarnished statement of actual facts. A very gratifying number of replies was received. The questions asked appear as headings to the columns of the tabular list.

For the purpose of this inquiry we are not concerned with the replies received dealing with conditions—such as cancer of the stomach—other than simple ulcer of stomach or duodenum. The object of this part of the paper is to ascertain what value to attach to gastro-jejunostomy in the treatment of these conditions. We have extracted, accordingly, the facts concerning those cases of gastric ulcer, pyloro-duodenal ulcer, and duodenal ulcer which we had treated by means of gastro-jejunostomy, and in estimating the results we have endeavoured to weigh up all the facts and indications of the patients' own reports, and having established a conclusion in each case by correlating the replies to all the separate inquiries in the questionnaire, placing the result, as estimated, in one of the following six categories: (1) complete recovery; (2) great improvement; (3) considerable improvement; (4) not much improvement; (5) doubtful or unknown; (6) death.

In arriving at our estimate in any case we have not been satisfied by a mere statement—e.g., of a simple affirmative—in reply to the third question of the questionnaire, in concluding that the case should be classed as a complete recovery. We have required that replies to other questions should bear this out fully—e.g., in the way of sustained or increased body weight, in respect to absence of pain or other symptoms, and in regard to ability to take ordinary food freely and without discomfort. This is borne out by reference to the tabular statement of the replies received.

The results of our inquiry are as follows, and they refer to 42 cases:—

Complete recovery ..	28 cases	.. ..	66·6 per cent.
Greatly improved ..	6 ,,	.. ..	14·3 ,,
Considerably improved	1 case	.. ..	2·4 ,,
Not much improved..	3 cases	.. ..	7·1 ,,
Doubtful	1 case	.. ..	2·4 ,,
Death	3 cases	.. ..	7·1 ,,

It will be seen from the above figures that, while complete recovery took place in 28 out of 42 cases in which gastro-jejunostomy was performed, or 66·6 per cent., the result of operation was to produce great improvement—up to the highest possible, as expressed in complete recovery, in 34 cases (i.e., 28 plus 6), or 80·9 per cent. Adding the "considerably improved" group also, the result works out at 83·3 per cent. Thus it may be said that over 83 per cent. of the cases were considerably improved, almost 81 per cent. were greatly improved, while 66·6 per cent. made a complete recovery.

Small Proportion of Unsatisfactory Results.

Against these figures there have to be considered 7 cases out of the total of 42 in which either death occurred, or not much improvement took place, or where the result was doubtful or unknown. Taking deaths first, in one case (gastric ulcer) death took place suddenly on the tenth day after operation from pulmonary embolism; the case had apparently proceeded satisfactorily up till that point. In the second case (pyloro-duodenal ulceration) the immediate result was good, but the patient died rather unexpectedly about two and a half months after the operation in a sanatorium, the cause of death being given as tuberculosis of the lung. In the third fatal case the operation included appendicectomy as well as gastro-jejunostomy, and there was no special difficulty; it was performed, however, during the height of the influenza epidemic, and the patient developed an acute influenzal bronchitis and broncho-pneumonia which led to death four days after operation.

The case classed as doubtful, the ultimate result being unknown, was that of a man who, prior to operation, had marked gastric tetany; the immediate result was a great improvement, but all efforts to trace the man after his dismissal from hospital have proved unavailing.

As regards the 3 cases where "not much improvement" has taken place, it may be confessed that their histories do not disclose any special reason for the failure.

The first was a man who had suffered for upwards of seven years from symptoms of pyloro-duodenal ulcer. He had great dilatation of the stomach, with ptosis of stomach and general visceroptosis. Also, he had many adhesions between the duodenum and gall-bladder. At operation it was noted that the first part of the duodenum was also greatly dilated. A little over a year after his operation he reported himself thus: "General condition slightly improved." *Complete recovery?*—"No; great headaches, as formerly, also flatulence." *Take food well?*—"Inclined to eat at any time—great thirst." *Pain?*—"Yes, very often in chest and back; no trouble with bowels; same weight as

TABULAR LIST OF CASES OF GASTRIC, PYLORO-DUODENAL, AND DUODENAL ULCER, SUBMITTED TO GASTRO-JEJUNOSTOMY, AND REPORTED ON IN THIS INQUIRY, WITH DETAILED ANSWERS TO QUESTIONNAIRE.

Cases Classed as having made a Complete Recovery.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Initials of patient.	Sex.	Age.	Pathological conditions (found or confirmed at operation).	How long had you been unwell before consulting me? (In years.)	How have you been since consulting me, or since being under my care?	Have you made a complete recovery?	Do you have now, or at any time, any of your former symptoms?	Do you take food well?	Do you have any pain after food now?	Do you have any trouble with the bowels?	Have you gained or lost weight since treatment or operation?	Have you ever any sickness, vomiting, or bleeding (by mouth)?	Have you had any bleeding by bowel (or tarry motions) since treatment?	Time in years elapsed from date of operation to date of report.
J. C.	M.	40	P.D.U., chr. P. sten. Di. sto.	6	Splendid health.	Complete recovery.	None.	Can eat anything.	None.	Bowels move once daily without medicine.	Gained 9 lb.	None.	—	11/12
F. C.	M.	51	P.D.U., chr.	7	Very well.	Yes.	No.	Yes.	No.	Just a slight weakness.	Gained 1½ st.	No.	No.	3 4/12
E. D.	F.	26	P.D.U., chr. P. sten. Di. sto.	2	Enjoying good health.	Yes.	No.	Yes.	No.	No.	Gained.	No.	No.	3 4/12
M. D.	M.	51	P.D.U., chr. P. sten. Di. sto.	4	Well.	Yes.	No.	Yes.	No.	No.	Gained weight.	No.	No.	8/12
C. D.	M.	37	P.D.U., chr. P. sten. Di. sto.	10	In excellent health.	Yes.	Once or twice, slight heartburn.	Appetite splendid.	None.	No trouble, but motions often loose.	Gained 15 lb.	None.	None.	1 7/12
M. D.	F.	31	P.D.U., chr. Crateriform U. "Tumour" (suggesting cancer).	13	Keeping very well.	Certain.	Not at any time.	Can take my food well, almost anything.	No.	No.	Gained over 1½ st.	None.	None.	10/12
J. G.	M.	50	P.D.U., chr. P. sten. Gall-stones. (Cho. at same time.)	30	80 per cent. better.	Practically.	Very occasionally, and slight.	Yes.	Very occasionally.	Have to take a laxative 2 or 3 times weekly.	Gained in first 2½ years; in last 6 months lost.	Very occasionally.	Only once, "piles."	3 1/12
E. H.	F.	45	P.D.U., chr. P. sten. Di. sto. Hypertrophy.	29	Very well.	Yes.	No.	Very well.	No.	No.	Gained 7 lb. in first few months, and much more since.	No.	No.	3 6/12
J. H.	M.	44	P.D.U., chr. Perforation. Di. sto. (Perf. sutured at same time.)	20 +	Never felt better.	Most complete and satisfactory.	Never had or have.	Yes, and enjoy it.	No.	No.	Gained.	Never.	Never.	1 10/12
M. McK.	F.	37	P.D.U., chr. P. sten.	2	Much better.	Doing very well.	Headache.	Yes.	None.	Constipation all along.	Gained.	No.	No.	10/12
W. McK.	M.	30	P.D.U., chr. P. sten. Chr. A. (Ay. performed at same time as G.J.)	8/12	Able to play golf and football with no ill-effects.	Yes.	No.	Yes.	No.	Still require to take Glauber salts thrice weekly.	Gained.	No.	No.	3/12
T. M. M.	M.	34	P.D.U., chr. P. sten. Di. sto.	10	Splendid health.	Yes.	No.	Extra well.	No.	No.	Gained.	No.	No.	3 7/12
A. P.	M.	29	P.D.U., chr., involving lesser curvature also. Hæmorrhage. "Tumour."	8	Never better all my life. In a new world since the operation.	Yes.	Slight pain once for a few moments.	Yes, enormous quantity.	None whatever.	No.	Gained 13 lb.	Never.	Never.	1 2/12
J. R.	M.	28	P.D.U., chr. P. sten. Di. sto.	4	Perfectly well.	Yes.	No.	Well.	No.	No.	Gained.	No.	A little.	8/12
J. S.	M.	50	P.D.U., chr. P. sten. Di. sto. Diverticulum of duodenum, with narrowing.	15	Splendid health.	Yes.	No.	Always a good appetite.	No.	No.	Gained 20 lb. since operation.	No.	No.	3/12
J. W.	M.	38	P.D.U., chr. P. sten. Di. sto. Adhesions to gall-bladder, chr. A. (Ay. performed at same time as G.J.)	9	Extra well.	Yes.	No.	Can eat anything.	No.	No.	Lost 7 lb. (A year after operation diabetes diagnosed.)	No.	No.	2 9/12

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
H. W.	M.	34	P.D.U., chr. P. sten. Di. sto.	1	Excellent health.	Yes.	No.	Yes.	No.	No.	Gained a stone.	No.	No.	4/12
R. R.	M.	29	P.D.U., chr. Perforation 3 years before. Perforation again, 6 hours before (site lesser curvature, pylorus); suture, and G.J.	4	Immediate result excellent. Went abroad; no reply to questionnaire.	—	—	—	—	—	—	—	—	4/12
H. McT.	M.	42	P.D.U., chr. P. sten. Di. sto. (Cancer suspected.)	2	Great deal better.	Yes.	—	Yes.	No.	No.	Gained.	No.	No.	10/12
M. Y.	F.	43	P.D.U., chr. P. sten. Di. sto. (Cancer suspected.) "Tumour," pylorus.	30	A different woman since.	Yes.	Palpitation at times.	Yes.	Some fullness after eating.	Sometimes.	Gained a little.	—	No.	3 5/12
H. H.	M.	37	P.D.U., chr. Extensive ulceration. (Cancer suspected.)	10	Very well.	Yes.	No.	Yes.	No.	No.	Gained.	No.	No.	3
W. D. H.	M.	56	P.D.U., chr., or cancer.	20+	This question not answered.	Yes.	No.	Yes.	No.	No.	Gained.	—	No.	7/12
Mrs. N.	F.	50	P.D.U., chr. P. sten. Di. sto. Gall-stones. (Cho. performed at same time as G.J.)	4	Steadily improving.	Yes.	No.	Yes.	No.	None now.	Gained half a stone.	No.	No.	5/12
J. L.	M.	45	Duodenal U., chr. Perforation week before; adhesions; dilatation.	20	Extra well; at hard work; have to use 28 lb. hammer. Best of health.	Absolutely.	Never a symptom.	Very well.	No.	No.	Gained 1½ st.	None.	None.	1 8/12
J. M.	M.	20	Duodenal U., chr. Perforation 4 hours before. Suture of ulcer at same time as G.J.	1½		Yes.	No.	Yes.	No.	No.	Gained.	No.	No.	1
G. A.	M.	32	Duodenal U., chr. Hæmorrhage, repeated. P. sten.	3	Immediate result excellent. Went abroad, to Australia, 2 years ago. All right.	—	—	—	—	—	—	—	—	2 10/12
J. H.	M.	27	Duodenal U., chr. P. sten.	7		Yes.	No.	Can take any kind of food. Yes.	None.	Have to watch them at times.	Gained a stone.	None.	None.	2 3/12
P. McL.	M.	51	Duodenal U., chr.	7	In perfect health.	Yes.	No.		None whatever.	No.	Gained 2 st.	No.	No.	2
					Cases Classed as Greatly Improved.									
Mrs. D.	F.	49	P.D.U., chr. P. sten. Hæmorrhages, repeated. Visceroptosis.	4	Not well yet.	No.	?	Better.	No.	None.	Gained at first; later stationary.	Two months ago, a little vomiting; none since.	No.	10/12
J. F.	M.	28	P.D.U., chr. P. sten. Di. sto. A., chr. (Ay. at same time as G.J.)	5	Much improved.	Not quite.	Sometimes.	Yes.	No.	Sometimes.	Gained weight.	Taken sick occasionally.	No.	2 7/12
Mrs. K.	F.	42	P.D.U., chr. Hæmorrhage, repeated and severe.	10/12	Keeping improving.	Not quite.	Sometimes slight burning.	Yes, light diet.	No.	No.	Gained.	Some sickness.	No.	4/12
C. McG.	M.	55	P.D.U., chr. P. sten. Di. sto.	13	A good deal better.	Not quite.	Yes.	Better than before	Occasionally.	Not nearly so much. Not much.	Very little change. Gained 1½ st.	Sometimes sickness. No.	No.	10/12
W. G.	M.	30	P.D.U., chr. P. sten. Di. sto. Perforation 2 years before.	4	Pain still at times, but not bad.	No.	Yes.	Sometimes.	—				No.	2 7/12
L. C.	M.	33	P.D.U., chr. Perforation 2 years before.	2+	Much improved.	No.	Occasionally.	Yes.	Seldom.	Constipation.	Gained a little.	On a few occasions sickness.	Piles.	3/12
					Cases Classed as Considerably Improved.									
D. G.	M.	36	P.D.U., chr. P. sten. Di. sto. Renal colic.	1+	Vomited bile at first fairly often. Now ceased.	Better in health now.	Yes, at times acidity.	Have to be very careful not to eat too much.	No.	No.	Gained ½ st.	Only when I have bile.	Only once.	2 8/12
					Cases Classed as Not Much Improved.									
G. H.	M.	30	P.D.U., chr. Di. sto. (extreme). Visceroptosis.	7	General condition improved.	No.	Yes, headache and flatulence.	Yes.	No bother, except occasional pain.	—	Same weight as formerly.	Occasional vomiting.	No.	1 2/12

TABULAR LIST OF CASES OF GASTRIC, PYLORO-DUODENAL, AND DUODENAL ULCER, SUBMITTED TO GASTRO-JEJUNOSTOMY, AND REPORTED ON IN THIS INQUIRY, WITH DETAILED ANSWERS TO QUESTIONNAIRE.

Cases Classed as Not Much Improved—continued.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Initials of patient.	Sex.	Age.	Pathological conditions (found or confirmed at operation).	How long had you been unwell before consulting me? (In years.)	How have you been since consulting me, or since being under my care?	Have you made a complete recovery?	Do you have now, or at any time, any of your former symptoms?	Do you take food well?	Do you have any pain after food now?	Do you have any trouble with the bowels?	Have you gained or lost weight since treatment or operation?	Have you ever any sickness, vomiting, or bleeding (by mouth)?	Have you had any bleeding by bowel (or tarry motions) since treatment?	Time in years elapsed from date of operation to date of report.
R. S.	M.	36	P.D.U., chr. P. sten. Dl. sto. Later, symptoms of tabes, with positive Wassermann reaction, &c.	3 +	Not off sick list. In Dec., 1920, reported on from another hospital.	No.	Yes, burning pain, vomiting bile.	Yes.	No.	No.	Gained 1 st., 2 lb.	Sickness and vomiting every six weeks.	Occasionally.	2 2/12
J. S.	M.	61	P.D.U., chr. P. sten. Dl. sto. Adhesions. Cancer suspected.	3	About the same.	No.	Yes, vomiting (bilious).	No.	No.	Constipation.	Lost ½ lb.	Yes.	No.	4/12
Case Classed as Doubtful.														
A. McK.	M.	28	P.D.U., chr. (gastric?). Tetany	2 +	No reply received, but immediate result good—believed to have relapsed later.	—	—	—	—	—	—	—	—	No report.

U. = ulcer. P.D.U. = pyloro-duodenal ulcer. P. sten. = pyloric stenosis. Dl. sto. = dilated stomach. G.J. = gastro-jejunostomy. A. = appendicitis.
Ay. = appendicectomy. Cho. = cholecystectomy. Chr. = chronic.

formerly: occasional sickness, but no vomiting or bleeding; no bleeding by bowel or tarry motions." The only other fact in this case calling for special note is that he had a bad attack of bilateral parotitis during the early period following operation.

The second was a man of 36 years, who had had for upwards of three years symptoms suggestive of chronic pyloro-duodenal ulcer, with great dilatation of stomach. The diagnosis was confirmed at operation. This man's report after two years was almost altogether unfavourable; information of his condition was obtained from another hospital shortly before this survey was begun. He now had symptoms strongly suggestive of "gastric crises" of tabes; also a positive Wassermann reaction had been obtained. He had gained, however, over a stone in weight, and had frequent periods—six or seven weeks—of comparative freedom from sickness and vomiting.

The third was a man of over 60 years, who had had digestive trouble for over three years. His symptoms, borne out to some extent by the operation finding, rather suggested a chronic pyloro-duodenal ulcer (there was more than a suspicion of a malignant element). At operation a definite healed ulcer of the lesser curvature of the stomach was also found. The man was, however, in a poor state of health otherwise, with degenerated arteries, and more than a little inclined to mental depression, almost to melancholia. His report after operation gives the result, from his point of view, as not at all satisfactory: "Slight loss of weight; vomiting of bile (?); do not take food well; condition unchanged." His mental depression remains, and may have militated against recovery and coloured his interpretation of the result. In any case, the interval which has elapsed between the date of operation and the date of the estimated result seems altogether too short to admit of a reliable test of the treatment.

What may be regarded, then, as the failures, from whatever cause, comprise 6 cases out of the 42—three deaths and 3 cases in which no definite improvement was achieved as the result of gastro-jejunostomy, a percentage of, say, 14, against a percentage of 66·6 complete recoveries, of 81 above the "great improvement" line, and of 83·3 above the "considerable improvement" line. Moreover, in each case of death, the fatal issue may almost be ascribed to an accidental circumstance, so that the fatal issue in these cases can hardly tell against gastro-jejunostomy as a method of treatment in such conditions. It may fairly be contended that only the 3 cases of actual failure—"not much improvement"—ought to be considered in comparison with the great bulk of the series.

For comparative purposes the duration of symptoms in each case prior to operation and the length of the period between operation and the date of the report are here given.

Complete Recovery (28).

A = Duration of symptoms prior to operation, in years.
B = Period between operation and report, in years.

A	B	A	B	A	B	A	B
6 ..	11/12	29 ..	3 6/12	15 ..	3/12	20 ..	7/12
7 ..	3 4/12	20(+)	1 10/12	9 ..	2 9/12	4 ..	5/12
2 ..	3 4/12	2 ..	10/12	1 ..	4/12	20 ..	1 8/12
4 ..	8/12	8/12	3/12	4 ..	4/12	1¼ ..	1
10 ..	1 7/12	10 ..	3 7/12	2 ..	10/12	3 ..	2 10/12
13 ..	10/12	8 ..	1 2/12	30 ..	3 5/12	7 ..	2 3/12
30 ..	3 1/12	4 ..	8/12	10 ..	3	7 ..	2

The average duration of symptoms in the 28 cases classed as having made a complete recovery was ten years; the verdict of complete recovery is based on an average period of observation, subsequent to the operation of gastro-jejunostomy, of one year and eight months.

Greatly Improved (6).

A = Duration of symptoms prior to operation, in years.
B = Period between operation and report, in years.

A	B	A	B	A	B
4 ..	10/12	10 ..	4/12	4 ..	2 7/12
5 ..	2 7/12	13 ..	10/12	2 ..	3

This table shows that the average duration of symptoms in the 6 "greatly improved" cases was 4 5/6 years, the average period following operation being one year and eight months.

Considerably Improved (1).

Duration of symptoms prior to operation: 1 year +
Period between operation and report: 2 8/12 years.
The figures here are: 1 year, and 2 years and 8 months.

Not Much Improved (3).

A = Duration of symptoms prior to operation, in years.
B = Period between operation and report, in years.

A	B	A	B
7	1 2/12	3	4/12
3 (+) ..	2 2/12		

The average duration of symptoms prior to operation of these 3 "not much improved" cases works out as 4½ years; the average period of observation subsequent to operation was one year and two months.

Doubtful (1).

Final result unknown, though early result satisfactory.
Duration of symptoms prior to operation: 2 years.

Deaths (3).

Estimated duration of symptoms prior to operation: 5, 5, and 15 years.

The average duration of symptoms prior to operation in these 3 cases ending fatally was thus six years.

Conditions for which Operation was Performed.

The following list shows in tabular form the conditions for which the operation was carried out in the group of 42 cases.

It may be noted that in only one case was the anterior operation employed. In 41 cases the method followed was the usual posterior gastro-jejunostomy, by the "no loop" procedure. In none of the cases was the pylorus either constricted deliberately or divided. We believe that closure of the pylorus is neither necessary nor indeed advisable; we are almost prepared to contend that it is not justifiable on any physiological ground. Nor do we believe that it is of value as a preventive of the much-talked of and dreaded "bilious vomiting." We are able to record here that out of the whole series of 42 cases in only 3 did "bilious vomiting" occur.

Gastro-jejunostomy alone (33 cases):

Gastric ulcer	1	Duodenal ulcer ..	4
P.-D. ulceration ..	28		

Gastro-jejunostomy plus suture of a perforated ulcer and peritoneal drainage (3 cases):

P.-D. ulceration ..	2	Duodenal ulcer ..	1

Gastro-jejunostomy plus appendicectomy (4 cases):

P.-D. ulcer plus appendicitis.. ..	3	Duodenal ulcer plus appendicitis ..	1

Gastro-jejunostomy plus cholecystostomy (2 cases):
P.-D. ulcer (chronic) plus cholecystitis (gall-stones), 2.

Bilious Vomiting as a Complication of Gastro-Jejunostomy.

It may be noted that of the 3 cases in which "bilious vomiting" occurred, in one this complication seemed to be related in some way to a renal calculus, which was passed about three weeks after the operation; the vomiting became very infrequent thereafter, and in a few months passed off altogether. In the other 2 cases it persisted for the period which the observation covered.

One of the two was the case already referred to as "not much improved," in which, later on, evidences of tabes presented themselves, with gastric crises, positive Wassermann reaction, &c. The other case was that of a man suspected of having cancer of the stomach, who had had symptoms of chronic ulcer for upwards of three years. Operation disclosed the presence of chronic pyloro-duodenal ulcer, with stenosis of the pylorus and adhesions; also great dilatation of the stomach. The healed ulcer at the pylorus region was chiefly on the lesser curvature. In this case the time between operation and date of report was very short, and improvement, both as regards bilious vomiting and in other ways, may still be looked for.

In general, our conclusion on the subject of the "bilious or regurgitant vomiting," of which so much has been written in connexion with gastro-jejunostomy, is that this much feared complication very rarely occurs, and, indeed, should not occur, where the operation is performed for some gross organic lesion of the pyloro-duodenal junction, and where the "no loop" method of operation is used. The possibility of such a complication seldom enters our calculations in respect of any case with which we have to deal.

It may here be mentioned—although it does not concern the purpose of this present survey—that the operation of gastro-jejunostomy was carried out by us in a considerable number of other cases—such as gastric cancer—otherwise inoperable, and with satisfactory results in the direction of palliation. Its applicability in such conditions cannot be disputed, nor can its beneficial effects be denied. We met with no "bilious vomiting" amongst the cases of gastric cancer in which it was employed.

ADDENDUM BY A. Y.

As indicated above, the survey applies to a series of cases within a comparatively short and well-defined period of three and a half years, the detailed particulars regarding which have been easily available for reference. In nearly all cases where gastro-jejunostomy was performed within this period, on account of gastric, pyloro-duodenal, or duodenal ulcer, the details of the immediate aftercourse have been known to us, and the later progress has been ascertained in response to the questionnaire. It may be of interest—it may even be necessary—to say that the figures do not represent anything like the total number of cases that might have been drawn upon by myself or my helpers for the purpose of statistical comparison. They form, however, a sufficiently representative and self-contained group, capable of consideration within workable limits, and are put forward on that footing.

A very brief note may be given here of the statistics relating to other occasions upon which I have performed the operation of gastro-jejunostomy—both before the period under review and subsequently—for just such conditions as are referred to in this survey—viz., ulcers of the stomach and duodenum. About a third of these were carried out in the Broadstone Jubilee Hospital, Port Glasgow; the remainder were in the District Hospitals, Glasgow, in the Western Infirmary, Glasgow, and in private practice.

The number does not include any of those other operations on stomach or duodenum, such as gastrostomy, pyloroplasty, pylorodiasis, pylorectomy, partial gastrectomy for chronic ulcer or cancer, or any of the large number of operations for simple perforation of stomach or duodenal ulcer. Nor does it include any cases in which gastro-jejunostomy was performed as a palliative procedure in otherwise inoperable cancer of the pyloric segment, although I have done a considerable number of such operations. The numbers apply exclusively to cases where gastro-jejunostomy was performed for simple ulcer and its near or remote effects. As to the results, these are known only in a general way, but I believe they are, and have been, certainly not inferior to the results in the more detailed series presented above. In none of them was there bilious regurgitation of any consequence; indeed, it occurred in only one case, and was transient and negligible.

The operation was carried out for the following conditions:—

	No. of cases.
1. Gastric ulcer	2
2. Pyloro-duodenal ulcer (P.D.U.)	36
3. Duodenal ulcer	11
4. P.D.U., combined with appendicitis (appendicectomy carried out at same time)	4
5. P.D.U., where an old gastro-jejunostomy opening had become contracted (a new gastro-jejunostomy being made)	1
6. Hour-glass stomach, resulting from chronic ulcer of the lesser curvature (gastro-gastrostomy being done at the same time as the gastro-jejunostomy)	2
Additional total	56

Of these additional 56 cases three died. In one, a case of duodenal ulcer, death occurred from syncope soon after operation. Two deaths were due to pneumonia, both being cases of pyloro-duodenal ulcer; one of them died on the third day from an acute broncho-pneumonia, the other from an ordinary lobar pneumonia on the fourteenth day after operation.

THE AFTER-EFFECTS OF WAR NEPHRITIS.[1]

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THE subject of this paper has deservedly attracted considerable attention during the past seven years, and while for the first four of these years we were menaced with a disease which had the effect of rendering a very serious number of men permanently unfit for the fighting line, our interest has subsequently been maintained in the study of the after-effects as related to the resumption of ordinary civil employment. When the paper was originally communicated in a fuller form to a medical society the first part comprised a personal narration of cases of acute nephritis as observed when they first reported sick with symptoms of that disability. In view, however, of the extensive nature of the literature already set forth concerning the earlier stages of the affection, it has been thought best to confine this publication to the second portion of the original paper, which deals mainly with the after-effects. The deductions which follow have been drawn from the study of 100 unselected cases of ex-soldiers examined in respect of their claims to pensions for nephritis at periods ranging from eight to three years after the onset of that disease.

General Scheme of Inquiry.

The investigation was originally instituted with a view to following up the significance of tube casts, a subject in which I had been interested several years before the war, but it seemed to me that a more general inquiry might be of value, and although I have personally investigated the urine in all cases, I am indebted to Drs. F. R. Bremner, F. A. Roper, T. R. C. Whipham and J. White, of the Ministry of Pensions Medical Boards, for the greater number of the systemic examinations. The general scheme of the inquiry adopted for the whole of the cases has been tabulated so as to distinguish officers and other ranks; among the former are included the particulars of one nursing sister. The age at onset, date, and locality have been noted wherever possible. The systemic examination has been noted under separate headings for A.C.D., impulse, cardiac sounds, pulse-rate, and description of arterial wall, blood pressure, œdema, condition of lungs, and general remarks, including a summary of the man's incapacity without entering into any detail of figures which should rightly be a matter for official returns alone.

The routine examination of the urine has included estimation of urea, calculation of the diastatic index, estimation of albumin (where present) by Esbach's albuminometer, and the microscopical examination of the centrifuged deposit. The methods of MacLean have been followed in estimating urea—viz., by giving 15 g. urea by mouth immediately after the patient has emptied the bladder. This amount is noted as also the amounts voided after intervals of one and two hours. The third voiding is, as a rule, selected for estimating the urea. We can thus place some value on the figure of the N. excretion and gauge the degree of polyuria if present.

In this series of 100 cases, examinations relate to four officers and one nursing sister, but it would not be a fair deduction to take account of the proportion, in that the figure represents all officers examined for nephritis since demobilisation, whereas the analysis of the reports on the men is not based upon the total number who have passed through the hands of boards. The true figure would be considerably below the average proportion of officers to men in a battalion. Table I. shows the age incidence of four officers, one nursing sister, and 100 men from the series.

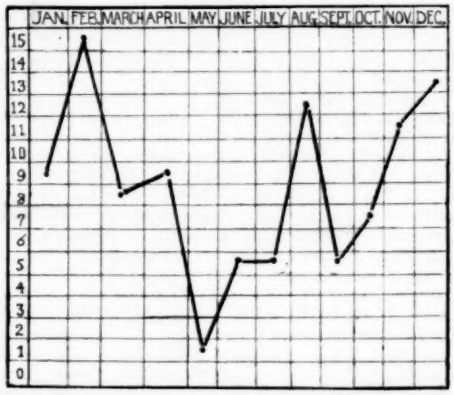
[1] Based upon a paper read before the Devon and Exeter Medico-Chirurgical Society.

TABLE I.

Age.	Officers.	Nursing sisters.	Men.
Under 20 ..	—	—	6
20–25 ..	3	1	17
25–30 ..	—	—	23
30–35 ..	—	—	21
35–40 ..	—	—	20
40–45 ..	—	—	9
45–50 ..	1	—	4
Totals ..	4	1	100

The chief point for comment in Table I. lies in the comparatively low figure of the 20 to 25 period for men—an age which would be well represented in the line after the first year of the war. The officers' figures are too small for comparison.

CHART 1.



Illustrating month of onset in 100 cases of nephritis, 1914–1920.

Date of Onset. (See Charts 1 and 2.)—It is worth noting that two of the cases occurred in 1914—one in August, the other in October—for some writers have regarded nephritis as almost unknown in the army during the war until 1915. One of these cases, aged 33, was a reservist, R.A.M.C., and had been working as a clerk in civil life. He contracted nephritis in August, 1914, during the retreat from Mons, and informs me that, in spite of the month, he suffered much exposure at night during this period. The charts show the gradual rise from 1914–15, and the steeple ascent to 1917, when the climax was reached. In 1919 appear the effects of cessation of active warfare combined with demobilisation.

No useful figures can be given as to locality, but the cases are drawn from every theatre of war with exception of East Africa. Cases occurring in the Royal Navy represent only 2 per cent. of the series.

History of Onset.—This is difficult to obtain with any accuracy, as we must frequently rely on the man's own statement, except for the brief diagnosis on Army Forms B. 103 and 178. Worthy of mention are the following examples: Diarrhœa; laryngitis with bad cold; influenza (?); bronchitis; invalided home with bronchitis—on mined hospital ship—exposure in water—nephritis; followed trench fever; onset with shivering and tender loins; still has attacks resembling P.U.O. (T.F.); trench fever and bronchitis. Two cases of aggravation originally occurred, one after "purpura," and the other after "acute rheumatism"—recorded in documents.

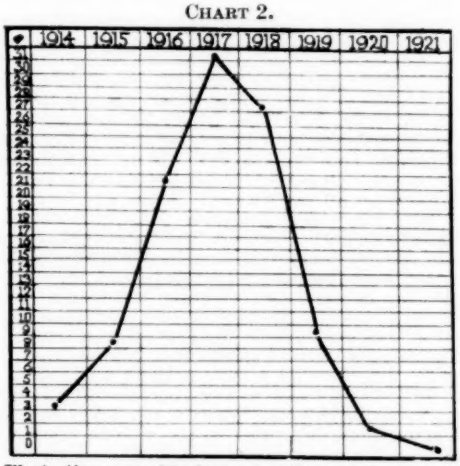
Cases severe at onset are occasionally recorded. Most marked are: (1) Nursing sister, aged 28 at onset, October, 1917, France. Uræmic convulsions and general œdema; still greatly incapacitated. (2) Gunner, R.G.A., aged 40, onset 2/3/17, France. Uræmic fits, general œdema, venesection; mild to moderate incapacity now. (3) Private, R.A.F., aged 34, onset February, 1917, France. Severe onset, suppression, hæmaturia; mild to moderate incapacity now.

Subjective Symptoms.—Headache in a large proportion, and frequent accompanying dizziness; breathlessness in about one-fifth of cases; vomiting 7 cases; hæmaturia (intermittent) in a very few cases—2 at least of which have subsequently been rediagnosed as calculus. Neurasthenic symptoms have been fairly frequent.

General Appearance.—Thirty per cent. have shown very little or no evidence of anæmia or debility. Anæmia has been noted to a moderate extent in about 45 per cent. Twenty-five per cent. have shown evidence of dilated capillaries—marked anæmia, dyspnœa, &c.—sufficient to stamp them at once as greatly incapacitated. Several have shown emaciation, and a general condition which has suggested reference to the tuberculosis officer for observation.

Systemic Examination.—Increase in the area of cardiac dullness was noted in 34 cases, but in only

CHART 2.



Illustrating year of incidence in 100 cases of nephritis.

two cases was the apex beat found outside the mid-clavicular line. In 86 cases where the impulse has been accurately noted this has been located in the fifth space in 80 instances and in the sixth space in six. Variations in the first sound have been reported in 29 cases, and accentuation of the second sound in the same number. Murmurs, chiefly apical systolic, have been recorded in 10 cases. One case has developed an aortic diastolic murmur, and in another of some uncertainty, not included in the series, nephritis is supposed to have preceded aortic disease. I have lately made use of the differential stethoscope (Leyton's original pattern) in reviewing a few of the more serious cases, and the readings tend to show a considerable increase in the intensity ratio on the part of the second sound, but with a loss of not more than 20 per cent. in the value of the first sound. The pulse-rate requires no special comment, except that it is by no means easy to gauge accurately at a medical board, when the man is frequently over-anxious and excited.

Arterial Wall.—This has been found thickened in 45 cases. Descriptions vary somewhat at different fingers, so that it would be misleading to give the sub-classifications of the various observers of the series.

Blood Pressure.—This has been noted under 110 in 1 case; 110–120 in 3 cases, 120–130 in 11 cases, 130–140 in 17, 140–150 in 33, 150–160 in 21, 160–170 in 4, 170–180 in 2, and 190–200 in 1 case. One case was found to have a blood pressure of 260 and another of 230. The case with 260 is now aged 50; onset of nephritis, July, 1918; area of cardiac dullness increased three-quarters to right apex beat in sixth interspace; systolic murmur at apex; arterial wall greatly thickened; urine, sp. gr., 1010; albumin, 0·05 per cent. (Esbach); urea, 1·0 per cent.; diastatic index, 2; granular and hyaline casts in every field. The case with blood pressure 230 relates to an almost identical case; same age, onset 1916. The cardiac condition is even less satisfactory, auricular fibrillation having developed recently.

Œdema.—This has been difficult to estimate accurately, as it so frequently clears up in mild cases a short time after rising, and we have then only the man's own statement as evidence at time of examination. Twenty-seven have, however, showed slight indication, such as puffiness of the eyelids and slight pitting of the feet and ankles; six showed moderate evidence, and two considerable.

Lungs.—Pulmonary complications have not been common—seven were found to have rhonchi and moist sounds at the bases, and in one there are suspicious physical signs at the left apex.

Eye.—It had not been practicable to obtain a routine examination of the fundus, although Dr. G. P. Hawker has kindly investigated one or two suspected cases, but as far as I am aware no gross lesion has been found in any case in this series.

Urine.

Volume.—It is, of course, impossible to obtain an exact measurement of the 24 hours' output in the majority of these examinations, but MacLean's urea test and the measurement of voidings, one or two hours after ingestion of the urea, provide useful information, particularly perhaps in that urea, having a slight diuretic influence, measurements below 300 c.cm. can be regarded as indication of absence of polyuria. Men's statements are, of course, often unreliable, and the frequent assertion, in the words of the Psalmist, that a man's reins chasten him in the night season, has often been unsupported by evidence of polyuria at the time of the examination or by the presence of albumin or casts. In 51 cases there has been evidence of some increase, and in 49 no evidence. The largest measurement was noted personally on Feb. 11th, 1922. This man passed a total of 1455 c.cm., 180 c.cm. to empty his bladder, and 1275 c.cm. in one or two hours after the urea test. He is aged 42, was wounded and gassed in France, and found to have nephritis on admission to hospital. He now shows considerable circulatory embarrassment in addition to evidence of contracted kidney. There was no reduction of Fehling.

Specific Gravity.—This is unreliable as ascertained at one short period of the day, but taken for what it is worth the average has not exceeded 1010.

Albumin.—The nitric acid ring test has been employed in all cases, and except where the merest trace has been under consideration the amount has been estimated with Esbach's albuminometer. Albumin has been found present in 65 per cent. and absent in 35 per cent.

Cases.	Estimation (Esbach's scale).	Cases.	Estimation (Esbach's scale).
51 ..	below 0·05%	1 ..	below 0·15–0·2%
6 ..	,, 0·05–0·1%	3 ..	,, 0·25–0·3%
4 ..	,, 0·1 –0·15%		

In 51 cases, therefore, the reading is low and represents little more than traces, but at the risk of appearing pedantic I would call attention to the common error of not appreciating—when calculating percentages—that Esbach's instrument represents grammes per litre.

Urea.—Estimation of urea is, needless to say, of little value when undertaken with a casual sample, but the method devised by MacLean provides a very fair appreciation of the efficiency of nitrogen excretion in a large number of cases, and checked by the diastatic reaction we are able to comment further on those cases where the excretion percentage has fallen low owing to diuresis. Hypobromite of soda solution has been freshly made for each case, and the instrument used has been the modified Doremus with tap. Albumin where present has always been separated from the sample for estimation of urea.

The following are the readings in 110 cases:—

Urea.	Cases.	Urea.	Cases.
Under 0·5% ..	3	Under 1·5–2·0% ..	29
,, 1·0% ..	16	,, 2·0–3·0% ..	26
,, 1·0–1·5% ..	25	,, 3·0–4·0% ..	11

Average for 110 cases—1·8.

It has been calculated that the percentage of urea passed one to two hours after ingestion of 15 g. of urea should be from 2 to 4 per cent.

Diastatic Index.—This has been ascertained in all but a few cases where the urea excretion was within normal limits and other signs negative. Here again the test is of greater reliability if undertaken with the mixed urine of 24 hours, but nevertheless the information obtained from an examination sample is of considerable value as a control to the urea estimation, and in these 100 cases the reading has generally coincided with the general clinical feature of the case, whereas the urea has not infrequently proved the only sign of ill-omen. I can find no instance where the diastatic index was normal in severe cases, where, as Dr. F. A. Roper has reminded me, we should consider the possibility of pancreatic disease and carry the test further than the 20-unit tube, which proves sufficient for a gauge of renal efficiency alone.

I give the following figures for 93 cases in the series:—

Units.	Cases.	Units.	Cases.
1	1*	6·6	23
2	6	10	34
3·3	16	20	13

Average = 8·7 units.

* Urea 0·2; diuresis very great, severe case.

For comparison with the urea test the average urea percentage diastatic index has worked out $\frac{1·8}{8·7}$.

Normal can be considered $\frac{U}{D} = \frac{3}{20}$.

The calculation has been carried out invariably with freshly prepared starch solution, and the starch obtained from the same reliable source—with this provision there is little risk of error if caution is applied in dissolving the starch—and one is only content with a clear solution.

Tube Casts.—These have been noted in 49 cases, and have been sought for with extreme care. In my opinion this figure should be considered a low estimate owing to the fact that in many cases where diuresis has been moderate or excessive a negative finding should not be final, and in all probability the examination of the centrifuged deposit of the mixed 24 hours' urine would bring this percentage appreciably higher.

Differentiation of Casts.—Hyaline casts alone were noted in seven cases, and with granular or in association with epithelial or blood casts in 44 cases. Blood cells (as a rule a few scattered red blood cells) were found in association with casts in 19 cases, but true blood casts symptomatic of acute or subacute relapses have been rarely found. Casts were found unassociated with albumin in eight cases, and albumin (not exceeding a trace[1]) was noted in 31 cases, where casts could not be found in the urinary sediment. The urine was examined fresh from the mixed samples and as a general rule after four minutes centrifugalisation. A general summary of the cases where casts were found in the urine shows in table form that where hyaline casts alone were noted the sum-total of the findings demonstrated an incapacity ranging from very slight to moderate—the tendency being to slight.

Capacity for Work.

A general summary of cases as regards their capacity for work, based upon the sum-total of the systemic examinations and urine analysis, is as follows:—

Very slight incapacity	20
Slight to moderate ,,	49
Considerable	17
Only fit for lightest occupation	8
Total incapacity	1
Died	1
Uncertain	4
	100

Table II. shows the association of casts and albumin or negative findings of the same in these various grades of incapacity. These deductions are merely drawn from the study of 100 unselected cases of ex-Service officers and men who have been examined for their invaliding disability of nephritis; they nevertheless represent a very fair proportion of the total number of cases under observation in this area (the S.W. of England), and whilst the general findings will, I consider, give a just insight into the present condition of the average case, the mortality figure reads low in comparison with that of 2·5 per cent. obtained from all known cases in the district.

TABLE II.—*Illustrating the Degree of Incapacity in Cases where Casts and Albumin were Present Together, Present Singly, or Both Absent.*

Incapacity.	Hyaline casts only.	Mixed casts. No albumin.	Albumin and casts.	Albumin and no casts.	No casts and no albumin.	Total.
Very slight	2	2	3	3	10	20
Slight to moderate	3	5	18	18	5	49
Considerable	—	1	5	9	2	17
Only fit for light occupation	—	—	7	—	1	8
Total incapacity	—	—	1	—	—	1
Died	—	—	1	—	—	1
Uncertain	2	—	1	1	—	4
Totals of cases	7	8	36	31	18	100

To sum up, acute nephritis is a rare disease in civil life; we know very little of its ætiology, save that it has been associated with a variety of infections, and that frequently there has been, in addition, the history of exposure. During the war it was at one time sought to prove that one particular micro-organism was responsible for the epidemic nature of the disease as occurring at that period, and that clinically the affection was something apart from the acute nephritis we saw so very occasionally at home. There, I think, lies the fallacy: we never saw sufficient acute nephritis prior to the war to allow us to appreciate the wide range in severity of the cases. We have learnt nephritis from the war. The mild or moderately severe type of case at onset appears to have been common, but we can find many examples of a severer form—some of them I have quoted in this paper—in all ways comparable to cases seen in civil practice. I know of an athletic young woman, who 12 years ago had an extremely severe attack of acute nephritis, and for weeks appeared to be drifting into a hopeless condition of chronic tubal nephritis, with general œdema; to-day she cannot be said to be absolutely sound, but she can hold her own in competitions requiring a considerable output of physical energy. Cases occurring in civil life in the same way as those under contemplation show that a hasty prognosis, based either on the mild or severe nature of the initial symptoms, will frequently prove erroneous in the light of the subsequent history.

The course of the severer cases seems to be comparable—why not the mild also? Is it not possible that we never see some of the mildest cases in home practice?—just as abroad so many were diagnosed quite accidentally. Again, does all the acute nephritis seen at home account for the apparently commoner case of chronic tubal nephritis?

Causation.

As regards causation we find no solid reason for divergence in the two instances. Overseas we were constantly faced with varied infections—P.U.O., trench fever, tonsillitis, influenza, acute rheumatism, the exanthemata, &c., and exposure provides a well-laid ground for the sport of secondary infections. The part played by exposure *must* be acknowledged; officers are undoubtedly affected in numbers considerably under their strength in proportion to men; native troops with their loin protection were less vulnerable than Europeans even when fighting in the climate of the latter; Highland troops provided fewer cases, and perhaps because of the kilt fitting snug to the hip.

[1] Larger amounts of albumin were found in cases where the diagnosis was found to be pyelitis or cystitis, but these are not included in the series.

A study of these figures shows that the trained soldier also suffered far less than the man of the new army. The trained soldier was accustomed to sleeping out in all weathers, and to get the last calorie out of his kit; he was educated into attaching more value to depth underneath than to weight above. The temporary soldier, on the other hand, was new from sleeping on a heavy mattress, and no doubt frequently with closed windows; he felt the cold and crammed every available rag on the top of himself, ignoring his back and inviting chills. The untrained man of over 30 proved especially inelastic to radical changes in his mode of life.

The effects as evidenced to-day cannot be lightly set aside either, as they influence—and are likely increasingly to influence—the comfort and wage-earning capacity of the individual concerned; or as they are considered in the light of the State provision which must be made in fair compensation for the same. In warfare we cannot expect to dispose altogether of the problem of exposure. Camp discipline and some general form of military training, if made possible for the youth of the nation, would at any rate render them more prepared for eventualities; any experiments would seem worthy of consideration if undertaken to counteract exposure, which, in spite of all that we have learnt from pathology and bacteriology, still remains a powerful factor in the causation of disease.

I have to thank the Director-General, Medical Services, Ministry of Pensions, for permission to publish these notes.

REFLEX DULLNESS IN OLD CHEST WOUNDS.

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C. Riviere [1] has described in cases of phthisis bands of impaired resonance to gentle percussion across the lower scapular region on both sides of the back, about the level of the fifth to seventh dorsal spines, which he terms "reflex bands of dullness." He states that in a healthy person they are absent, but can be made to appear for a time by forcible percussion of the front of the chest; that they are present in otherwise healthy subjects in whom there is marked *nasal obstruction;* and that, in the absence of nasal obstruction, the persistent presence of these bands of dullness "denotes an irritation (? always inflammation) of the lung parenchyma of some causation not necessarily tuberculous" and "will help to decide the presence or absence of a hidden focus in a case suspected of early tubercle, and they are useful in the exclusion of all catarrhal conditions not involving the lung parenchyma."

Some observers are frankly sceptical not only as to the interpretation, but even as to the existence of these bands of dullness. Those who invariably practise heavy percussion are not likely to find them. Most physicians who examine many chests will probably agree that there are areas of impaired resonance in early cases of phthisis which cannot well be due to anatomical change in the lung substance; they are too extensive, or are found on both sides of the chest when the only other evidence of disease is unilateral. Since reading Riviere's paper I have made it a practice to search for "band dullness" as a first step in the routine examination of all lung cases. It should be the first step, because the necessary manœuvres in the later examination of the patient may in themselves cause the sign to appear. It is also necessary to observe whether the patient has nasal obstruction. In practice it is sometimes difficult to be sure whether the band dullness is present. The cases fall into three groups: (1) Where the sign is certainly present; (2) where it is certainly absent; and (3) the doubtful cases. Greater experience, or a nicer discrimination in touch and hearing, would very probably enable one to eliminate the doubtful group.

[1] C. Riviere: THE LANCET, 1915, ii., 387.

Symptoms Resembling those of Phthisis.

In examining patients for this sign I have as far as possible avoided all bias as to the likelihood of its being found, or as to its significance if found. During the past three years I have examined in this way upwards of 60 men who suffered gunshot wounds of the chest during the war. They were referred to me by the Pensions Medical Board, in most cases because some of their symptoms or signs were suggestive of pulmonary tuberculosis. Parisot [2] and others have pointed out how closely the symptoms may resemble those of phthisis. Dyspnœa on exertion, cough, hæmoptysis, and pains in the chest are very frequently complained of; the toxic symptoms of active tubercle, such as tachycardia, sweats, anorexia, and headaches are, however, usually lacking. The signs and X ray shadows are often very puzzling, and in some cases only repeated negative sputum examinations will serve to exclude tubercle.

Sixty-five cases of old chest wounds have been examined. They may be divided into four groups: 1. Non-penetrating, where there was no evidence of injury to the lung at the time of wounding, 3 cases; these have no further interest. 2. Perforating—i.e., "through-and-through" wounds—15 cases. 3. Penetrating wounds, where the foreign body had been removed by operation either soon after the wound or later, 19 cases. In most cases the foreign body had been removed from the pleura or the chest wall, only in a few instances from the lung itself. 4. Penetrating, with foreign body retained, 28 cases.

The findings as to "band dullness" in the last three groups are shown in Table I.

TABLE I.

Group.	—	Cases.	Band dullness—	
			Present.	Absent.
2	Perforating	15	3	12
3	Penetrating—F.B. removed	19	3	16
4	Penetrating—F.B. retained	28	24	4

Two of the three cases in Group 2 with band dullness present had some degree of nasal obstruction.

With few exceptions the cases in Group 4 had been X rayed, but in most of them there was no exact localisation of the foreign body. In the four cases where band dullness was absent, and in three where it was present, the retained projectiles were probably outside the lung.

Two cases in Group 4 were definitely shown to be tuberculous by the finding of tubercle bacilli in the sputum. The remainder were considered non-tuberculous. This small proportion (3·2 per cent.) is in agreement with the general experience that chest wounds are comparatively seldom followed by phthisis.[3] In view of the interest of the subject a brief note may be given of these two cases.

CASE 1.—Private, wounded in May, 1915, in second right interspace, piece of shell retained in upper lobe of right lung. In October, 1919, complained of sharp pain in right breast and shoulder, dry cough, and dyspnœa on slight exertion, and said that these symptoms had been present more or less since the wound. Pronounced dullness, feeble breath sounds, and impaired mobility of right upper lobe. Sputum: T.B. present. Was well and working 12 months later.

CASE 2.—Rifleman, wounded in 1915 in right lung, piece of metal retained in right upper lobe. He became fit again for service and was twice subsequently wounded in the limbs, and discharged from the army in December, 1918. In April, 1920, he complained of dry cough, pricking pain in right breast, and shortness of breath on exertion. Early signs of phthisis were found at right apex, and T.B. appeared in the sputum after the administration of iodide. The disease ran a progressive course, and the patient died in May, 1921.

It will be noticed that in both cases there is a long interval between the date of the wound and the *discovery* of active tubercle, so that the causal relation-

[2] J. Parisot: Rev. méd. de l'Est., June, 1921.
[3] J. B. McDougall: Tubercle, 1920, i., 353.

ship must remain in doubt, but it is impossible to be sure how long symptoms of phthisis had been developing, and it is at least significant that in both cases the disease first appeared in that pulmonary lobe which contained the piece of shell.

Turning to the non-tuberculous cases, it appears from the table above that the presence or absence of the band dullness sign is closely related to the presence or absence of a retained foreign body in the chest. In wound cases, therefore, this sign cannot be taken as diagnostic of active tubercle. Accepting Riviere's view that the sign indicates an irritation or inflammation of the lung parenchyma, it appears that a bullet or shell fragment is not always retained by the lung with such complete indifference as has been thought. The cases described by Moynihan [1] point to the same conclusion. It appears also, since band dullness was found in some instances so long as seven years after the wound, that the symptoms due to a retained foreign body may last a long time, and are by no means entirely subjective. In two cases there was clear evidence from successive radiograms that the foreign body was changing its position in the lung. One of these patients had considerable hæmoptyses about the times of shift in position.

Symptoms of Old Chest Wounds.

The fact that a man is being examined with a view to reassessment of pension may very naturally enhance to some extent his description of his symptoms. Table II. shows the chief symptoms in the three groups.

TABLE II.

Group.	—	Cases.	Number complaining of—			
			Pain.	Dyspnœa.	Cough.	Hæmoptysis.
2 3	Perforating Penetrating—	15	10	14	8	2
	F.B. removed	19	11	12	8	6
4	Penetrating—					
	F.B. retained	28	24	21	14	6
	Totals ..	62	45	47	30	14

The chief points to be noticed are the frequent complaint of dyspnœa and the comparative rarity of hæmoptysis in all the groups; and the relative frequency of pain, which might be expected, among the cases with a retained foreign body. These points are brought out more clearly in Table III., which shows the main symptom volunteered by the patient.

TABLE III.

Group.	—	Cases.	Number giving as main symptom—			
			Pain.	Dyspnœa.	Cough.	Hæmoptysis.
2 3	Perforating— Penetrating—	15	4	10	1	0
	F.B. removed	19	6	9	1	3
4	Penetrating—					
	F.B. retained	28	17	6	4	1

It will be seen that shortness of breath was a more prominent symptom among the cases free from retained foreign bodies, and that pain was much more conspicuous among those with a retained projectile.

The lung parenchyma is not sensitive to pain, so that this symptom is thought to be due to drag and pull on localised adhesions, where "a part only of the lung is firmly anchored to the pleura, the rest being free to move. A general diffuse adhesion between the pleural surfaces is not attended with pain, and, indeed, may be a means of preventing it" (Grey Turner, quoted by Moynihan). A missile which has passed through the chest wall in one place, and then lodged in the lung, is more likely to cause such a localised adhesion; but a missile which passes right through would be likely to cause at the wound of exit another adhesion tending to prevent this drag on one part of the pleura.

[1] Sir B. Moynihan: British Journal of Surgery, 1920, vii., 444.

Conclusions.

1. Wounds of the lung are only rarely followed by tuberculosis; two instances out of 65 cases were found in this series.

2. The physical sign of "reflex band dullness" is frequently found in old lung wound cases, when there is a retained foreign body.

3. Both this sign and the symptoms experienced by these patients suggest that a piece of metal retained in the lung keeps up a certain amount of chronic irritation.

A NOTE ON THE INTRAVENOUS INJECTION OF SERUM.

BY POUL IVERSEN, M.D.

(*From Blegdams Hospital, Copenhagen, Prof. V. BIE, M.D.*)

THE object of the serum therapy of diphtheria is partly to neutralise the toxin by degrees as it is absorbed and partly to neutralise the toxin already fixed by the tissues. The first requires that a certain presumably small concentration of antitoxin shall be present in the blood at the earliest possible moment; the second probably requires as high a concentration as possible. The object of treatment ought, therefore, to be to furnish the patient as quickly as possible with a high antitoxin concentration in the blood, and this is most easily attained by injecting the antitoxic serum intravenously. Objections can hardly be made theoretically against this method of procedure, as it has been shown that antitoxin which gets into the blood by this method disappears just as slowly as when it is injected subcutaneously or intramuscularly (Th. Madsen), but two practical points might deter doctors from employing the intravenous method as the principal treatment. Is the technique too difficult and the intravenous injection of serum dangerous? The technique should not be any hindrance, as it only consists in drawing up serum into a syringe under aseptic conditions and injecting it slowly into an arm vein. Experience alone can indicate any dangers arising from this method. I will therefore give an account of how the patients who were treated in Blegdams Hospital by intravenous injection in 1919, 1920, 1921, and the first half of 1922 have stood it, and how patients who had previously had serum tolerated reinjection, especially when it was given intravenously.

Description of Sera.

The serum is supplied by the Danish State Serum Institute. It has mostly contained 0·5 per cent. phenol, 400 units per c.cm. During the last year 1·0 per cent. chinosol has been added in place of phenol. At one time the serum was concentrated by fractional precipitation with ammonium sulphate. Quite recently the Serum Institute has succeeded in raising the antitoxin in the horse's serum as high as 800 units per c.cm. without precipitation or concentration in any other way. This strong native serum and chinosol serum represent a considerable advance. As regards cases of serum disease we have not observed any difference between these sera.

First Injections.

Altogether 406 patients, who had not previously had serum, received intravenous injections. Of these 27—that is to say 7 per cent.—presented the first couple of hours after the injection an affection only rarely seen after intramuscular injections, which usually takes the form of a rigor of 10–30 minutes' duration. The pulse is small and the patient blanched. More rarely the rigor is absent and the attack resembles a mild collapse. With the exception of a single case, where the patient was confused and sluggish for a couple of hours, the condition is quite transitory and easily counteracted by subcutaneous injection of camphorated oil. A serum rash appeared in 54 per cent. of the patients between the fourth and fourteenth day, the average day being the ninth.

Classification of Cases.

The cases are classified according to the different years.

In 1919 68 injections were given. After nine of the injections (13 per cent.) the above-mentioned attacks occurred, rigors six times and collapse three times. In all nine cases 20 c.cm., containing 8000 units, were injected. An 8-year old girl received 45 c.cm. serum and a 10-year old girl 30 c.cm. serum without disagreeable after-effects.

In 1920 119 injections were given. After one of the injections only was there a slight attack of collapse, with no rigors. In this case 24,000 units were given intramuscularly on admission. On the next day 44,000 units were given intramuscularly + 4000 units (10 c.cm.) intravenously. Half an hour after the intravenous injection there was a tendency to collapse.

In 1921 174 injections were given. After ten of the injections (6 per cent.) rigors occurred eight times and collapse twice; 10–10 c.cm. serum were given, containing 8000–32,000 units.

In 1922 (first half year) 45 injections were given. After seven of the injections (15 per cent.) rigors occurred five times, collapse once, associated with a serum rash immediately after the injection, and once an attack of giddiness; 10–20 c.cm. serum were given containing 8000–16,000 units.

In elaborating the material I have been unable to help noticing that the attacks are independent of the size of the serum dose, and that their number varies greatly from year to year. These facts indicate both individual idiosyncrasies and differences in the serum used.

Reinjections.

I will now proceed to discuss reinjections, concerning which we have at the beginning been chary, on account of the anaphylactic shock manifested in animal experiments. Reinjection was carried out from January, 1916, to July, 1922, in 99 cases, from a few months to about 15 years after the first injection. In some cases we tried to desensitise by giving 1000 units subcutaneously 5 to 24 hours before the therapeutic injection, in others (a very few) by injecting 1 to 2 c.cm. serum intravenously in the course of ten minutes. In both methods the interaction between certain protein substances, which takes place after the injection, should occur so slowly that shock is avoided. In the majority of cases, however, we have either injected the usual serum dose intravenously, but very slowly to begin with (10–20 c.cm. in the course of 20 minutes) and at the same time given an intramuscular injection, or we have injected the whole amount intramuscularly.

In 18 out of the 99 cases desensitisation was attempted by subcutaneous injection, but the diphtheria disappeared so quickly in 9 of them that the subsequent injection was omitted. In none of these 9 cases was any serum disease observed beyond some reaction at the point of inoculation. In the other 9 cases an intramuscular or a single intravenous injection was given later, usually on the day after the subcutaneous injection. In 6 of these 9 cases nothing happened. In 1 case a slight rigor occurred four hours after the subcutaneous injection, but nothing occurred the day after, when 12,000 units were injected intramuscularly; in 1 case there was a rigor two hours after an intramuscular injection of 10,000 units. This patient developed an enormous serum rash on the fifth to sixth day, and also a small soft pulse. The patient who received an intravenous injection had severe vomiting after the injection (28,000 units).

In 18 cases an intravenous and an intramuscular injection were given without the desensitisation procedure. The intravenous injection was given slowly in the course of 10–20 minutes. In 13 cases nothing happened: in 2 cases while the intravenous injection was taking place,* and in 2 cases, 1–1½ hours after the latter, the patients had a rigor of the same kind and severity as those observed in patients who had not previously received serum. In the last case (diphtheria gravis) 10 c.cm. of serum was given intravenously without unpleasant results, but ten minutes after 100,000 units were injected intramuscularly, in immediate response to intravenous injection, the patient collapsed. The pulse was somewhat improved by a stimulant, but the patient died four hours later. This patient, who was admitted on the fourth day of the disease, was moribund when taken into hospital; death was, therefore, not due to the serum injection. In 63 cases 10–80 c.cm. serum were injected intramuscularly, also without preliminary desensitisation. In 57 cases nothing happened; once there was a little collapse, and three times there was an urticarial serum rash shortly after injection. In 2 cases in which a very intense serum rash appeared on the fourth and fifth days respectively, collapse occurred simultaneously with a very small or imperceptible pulse, which, however, was much improved by a subcutaneous injection of camphorated oil. The first of these cases is reported in detail later on.

These two cases, as well as the last one mentioned in the group which had first received a subcutaneous serum injection, undoubtedly exhibit the most unpleasant symptoms for patient and doctor. The patient is very distressed by the itching rash, œdema of the face, particularly the lips, and pains in the joints. The doctor is perturbed by the bad pulse which may occur periodically. In patients who have not previously received serum a similar morbid picture may occur, but scarcely with such severity as in these three cases, the clinical notes of one of which will be given.

CASE 145.—Female, aged 11 (1918). Membrane covers the tonsils. The patient was admitted on Jan. 9th, and received 20,000 units of antitoxin intramuscularly. On the 10th she slept well, membrane decreasing. On the 11th remaining membrane small. On the 12th small spot on uvula. On the 13th, 5 A.M., patient became blanched, with cyanosis of the lips, moist with sweating, cold, relaxed, with a small quick pulse, and nausea. This attack lasted about two minutes. Simultaneously an urticarial serum rash broke out on the cheeks, which itched. There was considerable œdematous swelling of the lips (negro lips). In the space of a quarter of an hour the eruption had spread over the whole face with the exception of the lips and chin, and also appeared in small spots on the arms and legs. Nothing at the site of injection. In the course of a couple of hours the eruption also increased in extent on the extremities, but remained unchanged on the face. After six hours it had almost disappeared. At this time (11 o'clock) she felt well and had a good appetite. At 7 o'clock and 8 o'clock there had been attacks of nausea, but otherwise no symptoms of collapse. On the 14th the patient was feeling well; pulse 68, regular, strong; condition of heart normal; edge of liver at costal margin. On the 16th, 17th, and 20th nausea and serum rash were again noted, with no serious symptoms of collapse.

This case was unpleasant enough, but the dangerous condition of collapse was quickly over. In other cases it recurs and they have a more protracted course. The injection of camphor seems to be a good remedy in combating the collapse. From the cases of reinjection referred to it appears that there is no advantage in desensitising by giving 1000 units subcutaneously, and as this directly hinders the necessity of immediately providing the blood with an adequate amount of antitoxin, we ought hardly to employ this desensitising method in cases which we know for certain will require a large injection later.

That the three unpleasant attacks of serum disease cited all occurred in patient who had received an intramuscular injection, is hardly more than chance; the intramuscular injections were more than four times as numerous as the intravenous injections. If we except the case of diphtheria gravis which led to death some hours after admission, there were four rigors in 17 intravenous injections—that is, about 24 per cent. of the cases. None of the cases were dangerous.

Leaving aside the 9 cases where only 1000 units were given subcutaneously, 74 per cent. got a serum rash on the first to tenth day, *usually on the sixth day*. Complete information concerning the attacks of serum disease in these patients after the first serum injection cannot be given.

A special little group of 21 patients, with a single exception (a week), have again received serum four to eight weeks after the first injection, usually

* The injection was stopped as soon as the rigor occurred.

40–50 c.cm. (16,000–20,000 units) intramuscularly two days in succession, in order, if possible, to have a favourable effect on the paralysis. From the therapeutic standpoint the result was negative. It is, however, of interest to see how these patients react to a serum injection at a time when we should expect them to be particularly sensitive. In four patients desensitisation was carried out by means of 1000–2000 units subcutaneously five to six hours before the real serum injection. In one of these, and in three of the other 17 patients, there was some vomiting. Apart from some reaction at the point of injection 14—that is, 66 per cent. of all the 21 cases—developed a serum rash on the first to fifth day, *usually on the second day*. In no case were dangerous symptoms seen.

Summary.

The intravenous injection of diphtheria antitoxin is not a dangerous method. It should be the method of choice, even in patients who have previously received serum. It is only necessary to give the injection slowly, and temporarily or definitely discontinue it on the appearance of any reaction on the patient's side. The material relating to the intravenous re-injection, however, comprises only 19 cases. The most unfavourable attacks after re-injection occur at the time when the serum rash appears.

THE TOXÆMIC ASPECT OF OCULAR DISEASE.

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A TOXIC condition of the blood affects in varying degree the nutrition of the eye. Eight years ago, in a paper contributed to THE LANCET,[1] I dealt with this subject under the heading of "Some Aspects of the Ciliary Body in Health and Disease." In effect the object of the paper was to draw attention to the numerous cases of hypothyroidism met with in ophthalmic practice.

Diagnostic Signs.

Thyroid insufficiency may be translated into failure of the thyroid to protect the body against some source of toxæmia. In such cases the gland becomes unequal to the demand made upon its functional activity, and its failure is manifested by numerous signs. It has been the habit in ophthalmic practice to overlook these signs; to treat the patients on general, because orthodox, principles; to ignore the hypothyroid condition and the significance of its presence; to disregard the obvious fact that behind the thyroid insufficiency there must be a cause into which inquiry should be made. It has been the custom, when a toxæmic condition is supposed to account for an irido-cyclitis, to inquire only into some recognised focus of septic infection, as, for example, the mouth. The possibility that the eye can exhibit infective changes arising from another source of toxæmia, in the course of which marked hypothyroidism is manifest, has received but little attention. The fact, however, is that the ciliary body—the "blood" organ of the eye—is peculiarly responsive to the effects of toxæmic foci. A notable example of this is the chronic irido-cyclitis known under the name of K.P. This is a disease often of prolonged duration, fluctuating always between improvement and relapse, and proverbially showing a disposition to resist the ordinary methods of orthodox treatment resorted to for its relief. Its notorious intractability to treatment is the measure of the failure to deal with its toxæmic source, the existence of which is proved by the signs of thyroid insufficiency present, and the favourable influence upon the course of the disease which thyroid treatment ensures. Closely allied to the symptoms characterising K.P. are those accompanying interstitial keratitis in children. Such children are regarded as the subjects of congenital syphilis.

But how often does it happen that we are unable to find any evidence elsewhere confirmatory of an active syphilitic taint. Even if a syphilitic origin of the disease be admitted, parenchymatous keratitis cannot be held to be a manifestation of a syphilitic process in activity. Were this to be so, on the contrary, anti-syphilitic treatment, which is so commonly resorted to, could scarcely fail to check the course of the disease. General experience, however, has determined that this method of treatment has no influence in controlling the active inflammation present. Moreover, apart from the ocular signs, the small patients are generally (invariably it may be said) the dejected objects of advanced malnutrition and marked anæmia. Again, they exhibit many signs characteristic of hypothyroidism. Finally, the keratitis is secondary to an acute cyclitis, such as might be expected to follow the physical conditions present. That parenchymatous keratitis in children is mainly a toxæmic manifestation is supported by the treatment which I came to adopt for its relief. The children were kept in bed, fed up on a generous diet, and 3 gr. of thyroid gland were given twice daily. As the physical condition improved so the intense photophobia and the keratitis subsided. Atropine, with fomentations, was the only local treatment necessary. Thus the toxæmia was held in check by the thyroid administration, and gradually normal nutrition came to be re-established.

"Sympathetic Ophthalmia."

There is another disease of the uveal tract, especially destructive in its effects, suggestive also of being associated with a general toxæmia. The ætiology of the irido-plastic cyclitis, known under the popular unscientific name of "sympathetic ophthalmia," still remains a myth. Theories abound as to its origin; nevertheless the problem is no nearer solution than was the case in ancient times. Our forefathers, greatly puzzled by the destructive incidence of the disease, willingly enough no doubt, accepted the hypothesis that "sympathy" could be a cause of inflammation. Custom has led to this interpretation being retained. Ophthalmic surgery still continues to be adorned by this particular terminology, which is conceded to be a solecism, but which at the same time is a reflection upon the science of our age. The possibility that the disease may be of toxæmic origin has hitherto escaped observation. Although every attempt has so far failed to isolate an organism as the causal agent, it may so be that there is one of a saprophytic type which only becomes virulent when exposed to a toxic environment. The colon bacillus is normally a saprophytic organism; in the intestines it exercises an inhibitory influence upon the putrefactive bacteria of the fæces. When, however, intestinal stasis is present, the putrefactive bacteria increase, the colon bacillus becomes pathogenic, and completes the vicious circle of the pervading toxæmia. The inference is reasonable that were an organism such as we have supposed in an injured eye to become pathogenic owing to this toxæmia its special toxin might be productive of the acute irido-plastic cyclitis in the wounded organ, to be followed subsequently, in the absence of due prophylactic measures, by the involvement of the sound one. The vulnerability of the ciliary body to toxic infection is sufficient to imperil the recovery of an eye, either after injury or following an intra-ocular operation. Plastic irido-cyclitis has developed even after the strictest antiseptic precautions practised in the course of an operation. The peril of the disease is by these precautions not averted. Natural repair of the tissues cannot be expected with blood infected with toxic products.

[1] THE LANCET, 1915, i., 1129.

Intestinal Disinfection.

All this, of course, may be regarded as pure hypothesis. Nevertheless it bears closely upon the theme which has been of late impressed upon me, and which it is the main object of this paper to emphasise—namely, the importance of the relationship of intestinal toxæmia to ocular disease. What, again, are the facts? Hypothyroidism associated with disease changes is proof of a pervading toxæmia. The toxæmia is subject to control by thyroid therapy, more or less. But in the case of the toxæmia arising from intestinal stasis the most scientific method of treatment must obviously be the sterilisation of the putrefactive organisms in the intestines.

By the introduction of the new benzene derivative dimethylomethoxyphenol, the putrefactive organisms are destroyed and the *B. coli*, owing to their "greater powers of resistance,"[2] under the changed environment are enabled to cast off their pathogenic virulence and resume their normal character. The significance of this addition to our therapeutic resources suggests the beginning of a new era in the treatment of disease; the fact that the poison trap of the intestines can now be brought under control may prove to be the solution of more than one hitherto undetermined pathological eye problem.

And not in man only will this advance prove to be effective. Animals also are subject to intestinal toxæmia. Calves, for example, are the subject of a disease known as "white scour." This apparently corresponds with the summer diarrhœa of children, and is attended with similar fatality. Sterilisation of the intestines of the affected calves has been found to arrest the disease, and recovery has followed. Some fascination undeniably belongs to the contemplation of the numerous problems of disease regarded from the aspect of intestinal toxæmia and its new treatment, and the study of this subject gives promise of yielding valuable clinical results.

A NOTE ON

GLUTEAL ANEURYSM AND RUPTURE TREATED BY ANTYLLUS'S OPERATION.

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THE following case is of sufficient interest to merit record.

A soldier, aged 30, was wounded in the left buttock by German shrapnel in 1918. Next day an embedded missile was removed and the wound healed well, leaving no disability. I saw him in the out-patient department, Bristol Royal Infirmary, on Dec. 5th, 1921. On leaving his office two days before, and taking a few steps, he felt a tearing sensation in his left buttock; his leg gave way under him, "the use going out of it," and he fell, but managed to rise and limp home.

Condition on Examination.—He looked pale and ill, though his mind was alert. Temperature 100° F. Pulse 100. When standing he supported himself by means of a stick. He had to lie on his side on the couch owing to the pain in the buttock. On turning him into the fully prone position a low-domed swelling was found at the painful site. The skin appeared healthy, save for a healed superficial oval scar 1¼ inches long situated about the middle of the buttock. The swelling was very tender, smooth, and compressible, as far as could be tested. It had an expansile impulse corresponding to the radial beat and seemed to underlie the gluteal muscles. The pulsation, most marked centrally, extended from the iliac brim downwards over an area about 8 inches in diameter. A systolic bruit was audible over it and more faintly in the left iliac fossa. The pulse in the posterior tibial arteries was equal. The abdomen and rectum felt healthy. There was little loss of movement in the limb, and no evidence of nerve pressure. X rays showed no bony lesion or shrapnel. Syphilis was denied.

[2] THE LANCET, 1921, i., 758.

Subsequent Course.—Leaking traumatic aneurysm was diagnosed, and he was admitted as an in-patient under the care of Mr. T. Carwardine. The same night pain in his buttock woke him. This was still present on Dec. 7th, but no evidence of paralysis of the sciatic nerve appeared. The pain and other signs in the swelling did not subside, and immediate operation was planned.

First Operation.—On Dec. 7th, transperitoneal ligation of left internal iliac artery. A median laparatomy was performed, the Trendelenburg position being adopted. The left internal iliac artery was easily located and a marked thrill felt in it which was absent on the right side. The gluteal swelling became smaller, losing its pulsation as the artery was ligated. On the 16th the swelling enlarged and became pulsatile again. This was thought to be due either to premature absorption of catgut ligature, or the opening up of the circulation across the pelvis from the branches of the opposite internal iliac artery.

Second Operation.—On the 12th, transperitoneal ligation of the gluteal and obturator arteries. The former incision was reopened, and the ligature on the internal iliac artery was found safely in situ. There was, however, faint pulsation in the gluteal artery, so this vessel and the obturator were ligated. All pulsation left the buttock swelling, but in the ward three hours later it was again felt and did not diminish. Ligation having proved unsuccessful, Antyllus's operation was planned.

Third Operation.—On the 30th, whilst an assistant made direct digital pressure on the abdominal aorta as required, through an opening in the upper end of the former incision a direct attack was made upon the aneurysm. A cutaneo-fascial flap was turned down over the swelling in the left buttock, and a 4-inch muscle-splitting opening made through the gluteus maximus. A bluish feebly-pulsating swelling was displayed, about the size of a hen's egg, and was partly freed from the surrounding structures. Whilst the assistant compressed the abdominal aorta the sac was incised and a rush of blood took place. Hæmorrhage was controlled by a large swab on the aneurysmal bed, and as this swab was gradually unrolled the mouths of afferent vessels were seized with forceps. The neck of the sac, which was in contact with the upper margin of the great sciatic notch, was tied off with No. 6 thread. Gauze packing and a tube were inserted as a temporary measure, and the wound was closed.

Recovery was rapid but not complete. The patient returned to work on March 1st, 1922, but suffered from pain in the buttock and limbs. He died suddenly on July 23rd from symptoms suggesting pulmonary embolism.

Remarks.

In this case a diagnosis of sarcoma or abscess was partly excluded by the history of sudden onset. The patient successfully underwent three major operations within 23 days. The failures of the first (Hunterian) operation and the second, which was equivalent to Anel's operation, are instructive, as in both instances pulsation was temporarily arrested. A similar experience is recorded by Gillette,[1] where pulsation recurred in a gluteal aneurysm seven months after apparently successful ligation of the internal iliac artery. My conclusion is that aneurysm of the gluteal artery should be treated by:—

1. Preliminary ligature of the internal iliac. This is in itself harmless and will control hæmorrhage from sac.

2. The aneurysmal sac is dealt with locally according to the condition found in the buttock: (*a*) if the wall of the sac is ill-defined, as in this case of ruptured aneurysm, intra-saccular ligature is best; (*b*) if a well-formed sac is present, then obliterative endo-aneurysmorrhaphy is the ideal method.

Bristol.

[1] Annals of Surgery, xlviii., 1908.

DONATIONS AND BEQUESTS.—The Right Hon. T. R. Ferens, High Steward of Hull, has given £2000 to the Hull Royal Infirmary to enable better equipment to be acquired for dealing with cancer.—The governors of the Oldham Royal Infirmary have received £2000 from Mrs. Elizabeth Shorrock, Hollinwood, to endow two beds, one in memory of her husband and the other in memory of her daughter.—Mr. Munro Page, of Huddersfield, left £150 to the Huddersfield Royal Infirmary and £100 to the Huddersfield Deaf and Dumb Society.—Mr. Richard Ward, of Kirkham, Lancashire, left £1000 to the Preston Royal Infirmary and £500 to St. Dunstan's Hostel for the Blind.

Medical Societies.

CHELSEA CLINICAL SOCIETY.

THE annual debate of this Society was held in the Club Room of St. George's Hospital Medical School on March 20th. In the absence of the President, DR. T. B. HYSLOP was in the chair.

Sir CHARLTON BRISCOE introduced the debate on

VISCEROPTOSIS.

He said that recently he had been interested in the study of the mechanics of respiration, and particularly of the diaphragm which was generally accused of being the prime factor in the production of visceroptosis. The act of respiration was carried on by two distinct mechanisms, thoracic movements and diaphragmatic movements. Generally both were concerned in respiration, but in the majority of individuals one type of respiration predominated—either the thoracic or the diaphragmatic. The thoracic breather, the rarer type, was apt to develop the type of chest known as emphysematous with a wide subcostal angle, although this was not necessarily associated with emphysema. In these persons the abdominal muscles were quite lax. In abdominal breathing the descent of the diaphragm was associated with contraction of the external and internal oblique and the transversalis. These muscles were most strongly developed in the flanks and in the epigastrium, above the level of the tenth ribs. It was the part below the level of the tenth ribs and internal to the anterior iliac spine, controlled by the weaker parts of these muscles which yielded. The rectus was not a muscle of respiration and played little part. This was the type in which visceroptosis might be expected to occur: and the commonly seen visceroptotic subject was a female with a small lower thorax and acute subcostal angle in whom there had been a loss of fat, while pregnancy or prolonged illness produced yielding of the lower abdomen. The speaker believed that the visceroptotic habit was produced early in life: while all new-born infants had very much the same type of chest, the two types began to be differentiated about three to five years of age. Curvature of the back from bending over unsuitable desks at school, fatigue and over-exercise, myopia, nasal obstruction from adenoids and constant colds, and increased intra-abdominal tension were all ætiological factors in producing abdominal respiration and the visceroptotic habit. Lack of proper exercise to develop the upper chest also favoured abdominal respiration. Since the habit was found early in life, prevention should begin at an early age by eliminating the factors the speaker had already enumerated.

Discussion.

MR. IVOR BACK was inclined to question whether visceroptosis existed as a clinical or pathological entity. Impressions of human anatomy and particularly of the position of the abdominal viscera had been gathered, in the past, from the formalin-hardened dissecting-room specimen. We now knew that in the erect attitude the abdominal viscera did not occupy any such position as that seen in the dissecting-room—the opaque meal and X rays frequently demonstrated a cæcum in the pelvis and a transverse colon resting on the pubes, positions which he was now inclined to regard as quite normal for many individuals. Ptosis of the kidney was recognisable by palpation without X rays and at one time was blamed for many vague abdominal symptoms, and various types of nephropexy were extensively practised on this account. This operation was now rightly discredited unless the symptoms, such as Dietl's crisis, definitely inculpated the ptosed kidney. Indeed, in recording the results of this operation in 448 cases the surgeon himself could only claim 55 per cent. of cures one year after (a very poor result for a modern operation), while 26 per cent. were "no better or worse." The visceroptotic patient was generally a thin woman and a potential neurasthenic, often with domestic worries. To tell this woman that the X ray examination revealed a dropped intestine was to convert a potential into an actual neurasthenic. The usual sequence was that after a trial of an abdominal belt the patient went to a surgeon who advised and performed various pexy operations with results that were often brilliant for six months or a year, in fact, until the suggestion that operation would be curative had passed off, after which the patient returned to her former state. He thought there must be something wrong with an operation, the results of which were explained by its advocates in two entirely different ways, by some on a mechanical basis and by others as relieving the drag on the mesenteric nerves. He pleaded for the same sanity as regards colopexies as now held in the case of nephropexy. In a few cases he thought patients with chronic constipation and a large blue, boggy cæcum constantly in the pelvis derived some benefit from fixing the cæcum, but that organ must not be deprived of its natural mobility.

DR. ROBERT HUTCHISON believed that visceroptosis was a definite clinical entity of great interest, but very difficult to diagnose both from its almost constant association with neurasthenia and from the fact that it was a great imitator of acute organic abdominal lesions. He could not agree entirely with Sir Charlton Briscoe as to its ætiology, since diaphragmatic breathing was less common in women who were usually the subjects of the disease. He attached more importance to the size of the pelvis in women and the derangements of its floor in consequence of pregnancy, and to loss of the supporting fat within the abdomen, but was inclined to agree that the muscular hypotonus which led to visceroptosis was the result of an inborn diathesis. Visceroptosis might be present without any symptoms; but the ptosed viscera acted at a disadvantage, and symptoms were produced if there was atony of the visceral muscle, or of the abdominal muscle leading to decreased intra-abdominal tension. He thought that the dependent position of the viscera led to the pooling of blood in the abdomen and consequent venous congestion. The diagnosis of visceroptosis as the cause of symptoms often presented the utmost difficulty. He had seen cases clinically resembling gall-stones or gastric ulcer where operation revealed no lesion other than visceroptosis, and thought that operation was demanded in these cases for diagnostic purposes, since there was no other means of finding out whether there was or was not a true acute abdominal lesion. He understood that nephropexy had been given up 15 years ago, and maintained that the utmost caution should be observed in advising surgical treatment apart from exploratory operation. Medical treatment was complicated by the mental symptoms, but something could and should be done for the various pains and draggings which, however slight their pathological basis, were very real to the patient. It was very important that medical treatment should begin early, and especially before the patient had submitted to multiple abdominal operations. The indications were to build up the abdominal wall and to repack the abdomen with fat. Many patients experienced relief from wearing a belt, not because it held up the viscera (for it did not), but on account of the increased intra-abdominal tension it produced. If the atony of the gut could be dealt with patients would be able to overcome the mechanical disadvantage of the ptosed intestine, and any method of sustaining the pelvic floor would be helpful.

MR. MORTIMER WOOLF had always regarded visceroptosis as the result of a congenital defect. In the cases he had seen in the post-mortem room, the operating theatre, or the dissecting room the ascending colon had a mesentery while the normal mesenteries were unusually long. This was not due to mere stretching, since the mesentery was often fat and vascular, but, he thought, to failure of the normal

fusing of the right leaf of the mesentery with the posterior abdominal wall. As the result of reading Mr. Waugh's paper he had begun to investigate the frequency of visceroptosis and was surprised to find that marked ptosis of the hepatic flexure existed in many cases very often without any symptoms. He had operated on a few cases with symptoms but the results had not been satisfactory, so that he would no longer operate except for intercurrent disease. Nephropexy he only performed when the presence of such symptoms as Dietl's crisis definitely inculpated the ptosed kidney. He thought that the low position of the colon as seen radiographically might very well be due to the weight of metal in the gut, and further, that the hepatic flexure was not normally fixed either in position in the body or as regards the portion of the colon forming the actual flexure. Mr. Woolf emphasised the importance of not attributing all abdominal symptoms to visceroptosis, and of bearing in mind superadded conditions, such as bands and chronic appendicitis. He quoted a case in which right-sided abdominal pain associated with very marked visceroptosis in a young woman was found at operation to be due to gall-stones and chronic appendicitis. Finally, if a belt were worn for this condition it was essential that it should not be allowed to ride up to the upper abdomen, and for this purpose it should be provided with perineal bands.

Adjourned Discussion.

The discussion was resumed on March 27th, with Dr. J. CAMPBELL MCCLURE, the President, in the chair, when Dr. F. HERNAMAN-JOHNSON spoke of visceroptosis in the anatomical sense. Two types, he said, were recognised. The first commonly followed pregnancy, when the viscera were ptosed owing to the laxness of the abdominal wall; the viscera could in these cases be made to regain a normal level by treatment. A belt was required by some of these cases as a temporary expedient; other cases required electrical stimulation of the abdominal muscles. If all women received proper treatment of the lax abdominal wall after parturition there would be fewer cases of visceroptosis, prolapse, &c., for these were often preventable by early and suitable treatment. The second type, in which visceroptosis was congenital, occurred in tall thin "slab-like" women, often very energetic. When X rayed the viscera were found to be low, but the condition was not incompatible with perfect health. When symptoms occurred they often simulated appendicitis, and were due, he thought, to response of the abdominal sympathetic to stimuli which normally would have no action. In these cases again electrical stimulation of the muscle was beneficial, although it was difficult to explain why it should be so. The presence of an adhesion (the diagnosis of which by X rays might be fallacious unless great caution were observed), a cæcum in the pelvis combined with stasis for 24 hours, and the failure of medical treatment after a fair trial, all called for surgical treatment, which in these cases was attended with good results.

The PRESIDENT remarked on the frequency with which anatomical visceroptosis was present without symptoms, and while agreeing that many subjects of visceroptosis conformed to the thin type described by previous speakers, he pointed out that some were of fat and muscular habit. The work of Keith in this country and Cannon in America showed that while the general tone of the hollow viscera was controlled by the vagus the physiological sphincters at the cardia, pylorus, ileo-cæcal valve, &c., were under the control of the sympathetic. It was the lack of balance between these two opposing innervations which caused the symptoms when these were present. In a paper entitled "Neurasthenia Gastrica" (THE LANCET, 1915, ii., 695) he had pointed out that the vago-asthenic type gave way under the influence of over-stimulation of the sympathetic from mental worry. Long-continued irritation, as from chronic appendicitis, or even in children from phimosis, acted similarly in causing loss of tone in the stomach and colon. The visceroptotic whose symptoms were cured exhibited no change in the position of the viscera; what had happened was that he had regained the normal balance between vagus and sympathetic action in the viscera. It was in fact not a question of the position of the organs, but a question of the presence or absence of gastro-intestinal stasis. At Guy's Hospital they found that amongst their students the most pronounced ptosis existed in the best athlete. A hint of the possible endocrine origin of intestinal stasis was given by the discovery by Sir A. Keith[1] in the crypts of colons excised for stasis of a pigment allied to adrenalin. Further support was given to this theory of the cause of stasis by the fact that the administration of adrenalin aggravated the symptoms. Intestinal hypotonus and gastric hypochlorhydria were often associated, and the beneficial results of treatment of the latter might possibly be due to stimulation of the vagus. Another possible factor in the production of symptoms was the dilated duodenum (so often present in visceroptosis) where it was possible that toxic bodies were formed which depressed the vagus or stimulated the sympathetic.

Dr. BEAVER MENNELL said that the practice of physio-therapy was as yet empirical, for often there was no scientific basis for the treatment adopted, although in practice this was found to do good. Treatment of visceroptosis might be prophylactic or directed against the established condition. Many women came for treatment with the condition well established after pregnancy. There could be no doubt that the abdominal muscles played an important part in the control of the action of the viscera, and after pregnancy these muscles were weak and over-stretched, and very often were deliberately allowed to remain so by the patient on account of the pain caused by their contraction. At St. Thomas's Hospital the electrical exercise of these muscles was now part of the routine treatment during the puerperium. In the chronic neurasthenic type of visceroptosis ordinary exercise which made further demands on the nervous system would not be tolerated, and recourse had to be made to electricity, using plain faradic stimulation, to exercise the muscles without causing nerve or heart fatigue. Massage, although never curative by itself, was helpful later. The Bergonié chair, which had been on the whole disappointing for the purpose for which it was designed—namely, for reducing weight—helped these visceroptotic patients much; whether the good effect was due to skin stimulation reflexly affecting the vagus or merely to abdominal massage, he was unable to say. For women with a low blood pressure and lax abdominal wall a belt was helpful, possibly by raising the intra-abdominal pressure and thus preventing the accumulation of blood in the splanchnic area. Since he had noticed that in many cases strain of the sacro-iliac joints was associated, possibly reflexly, with constipation, even in muscular individuals, he advocated that where a belt was fitted it should be so designed as to support those joints.

Dr. H. A. ELLIS, who had worked in this subject, partly in conjunction with the President and partly by himself, was convinced that the symptoms of visceroptosis when they occurred were due to atony of the gut. Cutaneous stimulation would cause the gut to contract, and different areas of the skin were associated in this manner with different parts of the gut. The visceroptotic was essentially an alkaline type with deficient gastric acidity. He had noticed in many of these cases the presence of an abnormal albumose in the urine, which he suggested might have an origin in the duodenum either from the absorption of albumose or from an error in fermentation. Some derangement of innervation was probably the prime cause of the condition.

Dr. D. M. BARCROFT thought that the disease was generally congenital and exhibited a tendency to appear in members of a family. In proof of this he described a family, three members of which had

[1] Discussion R.S.M.: The After-Results of Colectomy, THE LANCET, 1922, i., 636.

recently come under his care. The first sister had abdominal pain accompanied by unusually prolonged pyrexia, and X rays showed marked visceroptosis. Appendicectomy and fixation of the cæcum had relieved her. A second sister developed abdominal symptoms (pain, flatulence, &c.) while studying for a music examination, but recovered after the examination was over. A third sister, who returned hurriedly from Italy on account of the illness of the first, complained of pain in the right iliac fossa and had a dropped kidney. The mother had the scar of an operation for removal of the right kidney, which had been performed after nephropexy had failed. Two other members of the family were of similar type. He thought that the environment of these patients had a powerful effect in bringing on symptoms, and many cases would get better if the environment could be changed. The vague pain in the sacro-iliac joints referred to by some speakers as associated with the visceroptosis was difficult to treat.

Dr. J. F. HALLS DALLY said that our knowledge of the origin and treatment of visceroptosis had advanced but little since the time when Glénard first described the complex. He thought that when symptoms were present there was a condition of general hypotonia in other systems besides the abdomen, and notably in the circulatory system. The blood pressure was generally low, but occasionally it was high from associated intestinal toxæmia. Another antagonism which entered into the picture, besides that between the sympathetic and vagus, was the opposing effects of the diaphragm and abdominal muscles in respiration. He suggested that lumbo-sacral pain was due to actual dragging on mesenteries and that the cause of symptoms in visceroptosis was the intermittent discharge of depressor substances into the blood.

Sir CHARLTON BRISCOE replied briefly.

CARDIFF MEDICAL SOCIETY.

A CLINICAL meeting was held on March 13th, Prof. E. J. MACLEAN, the President, in the chair.

Gas, Oxygen, and Ether Apparatus.

Dr. H. GORDON GREAVES read a paper on the evolution of the methods for producing anæsthesia, in which he summarised the history of anæsthetics from the year 1776 when Priestly discovered nitrous oxide and also oxygen up till the present day. The contributions of Sir Humphry Davy in 1798, Henry Hickman in 1820, Horace Wells in 1844 were summarised, before the day of Frederic Hewitt was reached. Of Hewitt the speaker said: "To his great scientific and mechanical skill we owe many of the data which have enabled us to apply 'gas and oxygen' to everyday surgical use, as he went deeply into the methods of administration of (1) N_2O pure, (2) definite proportions of N_2O and air, (3) indefinite proportions of N_2O and air, (4) definite proportions of N_2O and O_2, (5) varying proportions of N_2O and O_2. In 1886 he devised his twin bags and special valves, with which he could give varying, but definite, proportions of gas and oxygen."

Through the following years, he continued, many apparatus have been evolved, but the war gave an enormous stimulus to anæsthetic and surgical procedures, and, in the speaker's opinion, the best present-day apparatus was that devised by Mr. Boyle, which he described.[1] The dangers of gas and oxygen Dr. Greaves considered few, and the great advantages as follows:—

1. Very ill and shocked patients recover quickly from its effects.
2. Feeble and septic patients do well because N_2O is non-toxic itself and does not increase the susceptibility of the body to the toxins set free from injured tissues.
3. Diabetic patients are less likely to go into a state of coma than with ether or chloroform.
4. Very long operations on not very sensitive parts can be undertaken with little risk of bad after-effects.
5. Obstetrical work is well done under gas and oxygen without risk to mother or child.
6. Nausea and vomiting are much less likely to follow than after chloroform or ether.
7. Delayed forms of acidosis do not seem to occur.

[1] THE LANCET, Nov. 3rd, 1917, and Feb. 8th, 1919.

Congenital Hydronephrosis.

Dr. IVOR J. DAVIES showed specimens from a case of small white kidney with an associated congenital hydronephrosis. The patient was an intelligent small girl of 15. The state of nutrition was poor, and a slight degree of anæmia was present. The complexion was sallow. Measles in childhood and a few attacks of tonsillitis in recent years were the only previous illnesses. There was no evidence of an antecedent nephritis. She was one of eight children, the others being healthy. The duration from the onset of symptoms to the termination was 15 months, the last three of which were spent in hospital. Severe paroxysmal headache was a feature from the onset, and was associated with occasional attacks of vomiting after meals, which became more frequent in the later stages, and during the last week the vomit contained altered blood. Puffiness under the eyes and swelling of the feet and ankles in the last few weeks were observed, otherwise there was an entire absence of œdema. There was much thickening of the peripheral arteries with a hard pulse. The systolic blood pressure only fell below 200 m.m. on a few occasions, and was generally a little higher. A slight degree of hypertrophy of the heart was evident, with alteration of the first sound at the impulse, and an accentuation of the aortic second sound at the base. Albuminuric retinitis with hæmorrhages was intense, and the star figure was a striking feature from the time when she was first seen in the out-patients' department three months before death, which, with a hard pulse and absence of œdema, made the diagnosis of small white kidney almost certain. A fair amount of pale alkaline urine was passed throughout; the specific gravity varied from 1005 to 1010. Albuminuria to the extent of 0·2 per cent. average was constant. A termination from uræmia was expected, but acute abdominal pain supervened suddenly, when a hard mass could be felt in the umbilical region. No blood or mucus was passed, and an enema produced a small result. Consciousness was preserved almost to the end, and no convulsions or twitchings occurred, death taking place two days later. Post-mortem examination disclosed the presence of an intussusception of the ileum at a point 2½ feet above the ileo-cæcal valve as the immediate cause of death. The right kidney weighed barely 1 oz., was pale grey in colour, with a mottled surface. The capsule was thickened and very adherent, leaving a granular surface when stripped. The cortex was much diminished and almost absent in places, otherwise very little renal tissue was left, the gland being almost entirely occupied by a uniform dilatation of the calices with thickened smooth walls, containing a turbid fluid. The pelvis was dilated and the vessels were thickened. The ureter was uniformly enlarged to the size of a pencil. The left kidney weighed 3 oz., was pale in colour, and of unusual shape, triangular in section owing to an apparent hypertrophy of the upper pole. The capsule was thickened but was adherent in a few places only, leaving a finely granular surface, with dilated venæ stellatæ over the upper end. The distinction between cortex and medulla was almost entirely lost. The arterioles were thickened. The pelvis was a little dilated, but the ureter was uniformly dilated almost to the size of the little finger. The bladder wall was hypertrophied, with prominent fasciculi over its inner surface. A mild degree of cystitis was present. The urinary passages were patent throughout. No cause was found for the condition of hydronephrosis and dilatation of the ureters. There was no abnormality of the vessels, nor of the pelvis or ureter on either side. The heart weighed 12 oz. and showed considerable hypertrophy of the left ventricle, the wall being almost one inch in thickness. The root of the aorta, also its descending portion around the orifices of the intercostal arteries, showed early degenerative changes of the intima.

Dr. H. A. HAIG detailed the histological features, and Mr. TUDOR THOMAS described the retinal condition.

Multiple Superficial Tumours (?).

Mr. J. W. GEARY GRANT showed a girl, 18 years of age, with multiple swellings over the face, arms, trunk, and buttocks, fresh ones appearing during the preceding fortnight. The first was noted four years ago over the left submaxillary joint; it was now vertically oval, about 2 inches by 1 inch, protruded slightly above the adjoining skin, and felt soft and semi-fluid; the skin over it appeared to be thinned. Masses elsewhere were smaller in size, and some felt almost like lax cysts, underlying thinned-out skin. All appeared to possess a brownish tinge, as though the overlying skin was pigmented. The diagnosis lay between multiple hæmorrhagic sarcomata of the skin, endotheliomata, nævi, and an unusual form of von Recklinghausen's disease. A section through one of the swellings removed from the scapular region showed a predominating connective-tissue element, with myxomatous change and evidence of œdema. Where the œdema was present the collagen fibrils took on a modified stain. There were no nervous elements to be detected. This appearance closely resembled one of the rarer types of von Recklinghausen's disease.

Bone Formation in a Laparotomy Scar.

Mr. J. BERRY HAYCRAFT showed a specimen of bone formation in a laparotomy scar. In September, 1921, a laparotomy was performed on a pensioner, aged 33. A chronic ulcer was found on the anterior wall of the stomach close to the pylorus. A posterior gastro-jejunostomy was done, and the appendix was removed. Four months later a lump was noticed in the scar; it was growing and became tender and the patient was readmitted in February, 1923. A hard lump was found in the centre of the scar, about the size of a walnut, 2 inches above and a little to the left of the umbilicus. It was not adherent to the skin, and was tender on pressure. This was explored on Feb. 17th; the tissue in the centre of the scar was found to consist of a hard mass in the rectus muscle, and deep to this was a thin plate of what appeared to be bone lying between the peritoneum and the rectus muscle. It was excised, and there was no evidence of any formation of bone in any other muscle.

Prof. E. EMRYS-ROBERTS pointed out that actively proliferating fibroblasts could, as a result of environmental stimulus, give rise not only to ordinary fibroblasts, but, under certain circumstances, to myxoblasts, chondroblasts, and osteoblasts; the variants resulting from the alterations in the types of intercellular material secreted by the cells concerned. In this case the fibroblasts had developed directly into osteoblasts, without any indication of intermediary forms, in a manner similar to the development of membranous bone.

Embolism of the Central Artery of the Retina.

Mr. TUDOR THOMAS showed a young man, aged 27, who had suddenly become blind in the right eye 17 days previously. On examination two days after the onset of the blindness the right eye was found to be completely blind. The fundus showed a dark-red macula, with a large area of greyish-white retina around in which the arteries were visible only as lines. The periphery of the fundus was of a normal colour, and the arteries were of a normal size. There was not much alteration in the size of the veins. The disc was white, and near its outer border was a small hæmorrhage. Seventeen days after the onset of blindness he was able to count fingers at about a metre, but there was an absolute central scotoma. The disc was white, and the arteries around the macular area were very much contracted, and in some of the branches the blood seemed to be split up into segments of red and white. The macula was visible as a red spot, with small yellow dots radiating from it in a very small circular area. The retina around the macular area was still grey in appearance, but the colour was not so pronounced as at the first examination. Above the macula were two small hæmorrhages. The margin of the disc was blurred and indefinite. The previous history of the patient did not reveal any transient attacks of blindness, and his last illness was nine years previously, when he had swellings in the neck, which appear to have been enlarged glands. He was a collier, and had always been able to perform hard work. He stated that he occasionally had attacks of palpitation, usually brought on by excitement. Examination of the heart did not reveal any murmurs, and it appeared to be normal. The Wassermann reaction was negative. Although the appearances in this case were those of embolism of the central retinal artery, there was no clinical evidence as to the source of the embolism; it was surmised that the condition was due to spasm of the retinal arteries, with subsequent thrombosis.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

JOINT MEETING OF THE SECTIONS OF MEDICINE AND SURGERY.

THIS joint meeting was held on March 16th, Dr. H. T. BEWLEY (in the absence through illness of the President, Dr. T. G. Moorhead) in the chair. The Secretary read a paper, written by the PRESIDENT, to initiate a discussion on the subject of

HYPERTHYROIDISM: DIAGNOSIS, VARIETIES, AND TREATMENT.

Dr. Moorhead began by reviewing existing knowledge. He referred to the frequent association of persistent thymus with enlargement of the thyroid. Mental factors, such as frights, were often associated (details of two such cases of his own were given). The possibility of gastro-intestinal infection as an ætiological factor was also mentioned. As regards diagnosis, he thought that the gastro-intestinal symptoms of hyperthyroidism were those most likely to be overlooked; in obscure cases a determination of basal metabolism would decide. Lymphocytosis occurred also in simple goitre, and was valueless as a distinguishing test. Tachycardia was, in his opinion, the most constant sign. Loss of weight was also very important. The association of Graves's disease and myxœdema in the same patient was sometimes, though rarely, found. As regards prognosis, gain of weight and diminution of tachycardia under treatment were favourable signs, but in cured cases the goitre and the exophthalmos frequently persisted. He was strongly opposed to surgical treatment of the condition, believing that proper medical treatment with X rays would cure the great majority of cases.

Sir WILLIAM WHEELER said that his interest had been stimulated by visits to Kocher at Berne, and by watching the operative work of Mayo and Crile. Recent advances had made the surgical treatment of cases of hyperthyroidism safe, and the mortality was almost negligible. There were really only three types of goitre: (1) The colloid, seen in young girls, with full symmetrical neck, associated sometimes with extreme nervousness, and difficult to distinguish from hyperthyroidism. The basal metabolic rate was the only sure method of differentiation. This was the type of goitre which responded to treatment with iodine, or its derivatives, or with thyroid extract. (2) The adenomatous goitre, in which operation might be delayed, in consideration of the importance of the thyroid gland in adult life, although adenomata frequently became toxic after a period of 15 years or so. Toxic goitre differed in many respects from Graves's disease; it was more dangerous, and gave rise more certainly to degenerative changes in the viscera. (3) The hyperthyroid cases, which were regarded in a general way as Graves's disease. Surgical treatment, he thought, was more certain than any other method. X ray treatment had the drawback that if the dose was too big myxœdema followed, and if too small the patient had a relapse. Should surgery become necessary after X ray treatment, it was complicated by the presence of fibrous tissue and adhesions. The only fatal case which he had come across was a case of adenomatous goitre, which, at the time of operation, was thought to be non-toxic, although the patient died suddenly from myocardial degeneration. Measurement of the basal metabolic

rate would have led to recognition of the nature of this case.

Sir JOHN MOORE said that as physician to a girls' school with 60 pupils not a year passed without some girls being brought to him on account of enlargement of the thyroid gland. These patients did well when treated for anæmia and given regular moderate doses of thyroid extract. In the early stages of goitre he was of opinion that if the patient was made to rise, with a fixed neck, from the recumbent position the thyroid gland would be emptied.

Mr. A. A. MCCONNELL said the question to him seemed to be: was it safe to treat cases by gradual destruction of the glandular tissue by X rays, or was it better to treat them at once by operation? He believed that the mortality in these cases was as great under medical as under surgical treatment.

Dr. W. C. MACFETRIDGE discussed the causation of exophthalmos, which could not, he thought, be due to excess of fat in the orbit.

Dr. G. E. NESBITT said that hyperthyroidism seemed to be rather rare in Dublin at present. A question of diagnosis arose in cases without enlargement of the thyroid, when a diagnosis could only be established by the measurement of the basal metabolic rate. X ray dosage was capable of almost mathematical accuracy.

Dr. BEWLEY said he had noticed the frequency of colloid goitre. He did not know what the cause of the condition was, but the water-supply in Dublin had nothing to do with it, because similar cases existed all over Ireland. He had seen only one case of acute hyperthyroidism. Regarding treatment, he thought that cases of the extreme kind should be treated at first, at any rate, by rest, sedatives, and X rays. Cases of medium severity he thought were best treated by surgery. The difficulty with regard to hospital patients was that they could not spare time to undergo prolonged rest.

SECTION OF STATE MEDICINE.

AT a meeting of this section on March 23rd, Mr. T. HENNESSY, the President, being in the chair, Dr. T. P. C. KIRKPATRICK read a paper on the

Work of a Venereal Disease Treatment Centre.

He described the procedure adopted at the centre opened at Steevens's Hospital in January, 1919, under the auspices of the Corporation of Dublin and the Local Government Board. In the four years ending Dec. 31st, 1922, 4222 patients presented themselves at the clinic, of whom 743 were women and children; of these women and children 355 were suffering from syphilis. The treatment relied on was the intravenous administration of novarsenobillon, given in weekly injections over a period of eight weeks during which time 4·05 g. of the drug were given. Subsequent treatment was guided by the condition of the patient and the blood Wassermann reaction. The results on the whole had been satisfactory, and out of the 78 patients with syphilis who presented themselves at the women's department in 1919 11 had given birth to healthy children subsequent to treatment.

There was a lively discussion, in which Sir ARTHUR BALL, Mr. A. CHANCE, Sir JOHN MOORE, Dr. ELLA WEBB, Dr. W. A. O'KELLY, Dr. W. M. CROFTON, Dr. W. BOXWELL, and Dr. G. E. NESBITT took part.

LIVERPOOL MEDICAL INSTITUTION.

A JOINT meeting with the Manchester Medical Society was held on March 22nd, Prof. J. HILL ABRAM, the President, being in the chair.

Dr. H. T. ASHBY read a paper on

Croupous Pneumonia in Children and its Complications.

He said that croupous pneumonia is a common disease at all ages of childhood after about the ninth month, before which age it is the broncho-pneumonia which predominates. Croupous pneumonia may be classified according to the time when the physical signs make their appearance. These latter may be present at once, they may at times be delayed for a day or two, or they may never be present at all. The diagnosis of the last type is made by the history of the sudden onset, the cough, the rapid breathing, the high temperature which keeps up, and the general look of the child. Fever of obscure origin in children often turns out to be croupous pneumonia. The delirium and convulsions during a severe attack of pneumonia, especially in highly-strung children, are sometimes so marked that the disease is pronounced as being meningitis. The progress of acute croupous pneumonia in children is good in uncomplicated cases and even in the so-called chronic pneumonia the outlook is good. Tuberculosis is a rare complication of pneumonia. There is no complication to rival empyema in frequency and in seriousness. It should be a golden rule to explore any doubtful case and if pus is present the earliest possible moment for its evacuation is essential to get the best results. Empyemata in older children do well with the ordinary operation and drainage-tube, although it is often a tedious recovery and a weak lung for the future. Empyemata in young children under two years of age do very badly, and this is where some new treatment is needed. The method of aspirating the empyema seems to give the best results, and it has the advantage that the child begins to take food again well and gain strength, even though the usual open operation has to be resorted to later. The pneumococcal empyemata do better as a rule than any other kind.

Mr. GEOFFREY JEFFERSON read a short paper on

Injuries to the Cervical Spine.

He confined himself in the main to those cases where concomitant nerve and spine injury were not present. He said that during the last 40 years it had been learnt to recognise and usually accurately to diagnose vertebral fractures of the lower thoracic and lumbar vertebræ, even when the fracture involves the bodies of the vertebræ alone, and the spinal canal is in no way encroached upon. In 1891 Kuemmell had drawn attention to spinal deformity resulting from previous injury. The clinical picture resembled healed spinal caries, but the clinical histories were, of course, quite different. Not so much attention, indeed very little, had been paid to the very similar cases which were seen not uncommonly in the neck. These were again sometimes compression fractures, sometimes dislocations. Mr. Jefferson referred to the pathological anatomy of the injuries, and to the conditions found at autopsy in the fatal cases. Most careful X-ray examinations are necessary for the diagnosis, and the speaker referred to certain fallacies in the clinical examination of these subjects. As for treatment, his figures showed a greatly improved mortality-rate over that usually quoted, but this was, he said, not due to any special excellence of treatment, but rather to improvements in diagnosis which led to the recognition of the slighter cases, these reducing the percentage of deaths very considerably. The death-rate in cases with complete physiological division of the cord at a high segment will probably always be enormous. Mr. Jefferson counselled against laminectomy in cervical injuries, at all events in the early stages, and pinned his faith to reduction of the broken or dislocated bones and immobilisation.

Dr. G. H. LANCASHIRE read a paper on

Urticaria.

He dealt especially with the treatment of the chronic form in adults, laying stress on the importance of an initial rest, bodily and mental, in addition to diet and drugs. The value of the skin protein-reaction appeared doubtful. Clothing was a matter of importance, and, in fact, success was only obtained by attention to detail in many directions, the cause of the trouble being often complex, including a psychic factor.

Reviews and Notices of Books.

THE STORY OF DRUGS.

A Popular Exposition of their Origin, Preparations, and Commercial Importance. By HENRY C. FULLER. London: T. Werner Laurie, Ltd. 1922. Pp. 358. 15*s*.

THIS volume of the Century Books of Useful Science will certainly be of interest to the layman for whom it is intended, but it is equally instructive to the physician and it will, in the few places where formulæ and scientific names are used, be more easily understood by him than by the layman. In these days of big manufacturing firms and specialised medicines the doctor often knows too little of the origin of his drugs, and the information imparted by much of this book will be valuable as well as good reading.

The work consists of 14 chapters which are really a series of pleasant essays, generally independent, but with the theme of the adventures of drugs from their origin to the time they come to the consumer. The choice of subjects is thoughtful. The first chapter treats of the homes of drug-producing plants, of attempts to introduce them to fresh countries, especially to America, and of the stimulus given by the war to these attempts. Next comes the manufacture of medicines and the history of its transference from the corner shop of the apothecary to the big factory of some well-known firm. Another chapter deals with the place of patent medicines, which the writer points out would be more appropriately designated proprietary medicines. He holds that they are necessary, and under the strict rules of the Proprietary Association of America, to which all leading firms belong, are safe and beneficial. Sections on Self Medication and the Family Medicine Chest bring out the patient's point of view on a subject which, though difficult, has to be faced; those on vaccines and serum therapy, and vitamins deal clearly with these special modes of treatment. Hay fever, "the malady of strenuous America," is the only disease which receives a chapter to itself; its relation to the presence of the common ragweed (*Ambrosia artemisiafolia*) is emphasised. The chapter on the Rôle of Alcohol brings out the large part played by this drug in the preparation of other drugs, and is especially interesting in view of prohibition. Here the difficulties which have arisen and how they have been met show how great has been the social and mercantile revolution. At first the manufacture of alcohol-containing drugs was enormously increased, but gradually this has been brought down to the point where it was before prohibition was introduced; preparations bought for the sake of their alcohol have been eliminated. While the legal side of alcohol appeals to the American more than to us, that of morphia and cocaine, which is fully dealt with in a chapter called Dope and Not Dope, is brought home to us by recent legislation. The essay on cosmetics called Paint, Powder, and Rouge makes quaint appeal to all, and is instructive to the medical man, for there are many useful hints in this borderline chapter.

The style of the book is easy; the writer knows his subject well, and he gives his own accumulated experience and not some other person's knowledge. Whether he speaks of production, manufacture, or legal restrictions, or therapeutic application, there is the same convincing if informal flow, interspersed with crisp advice and picturesque similes.

THE MEASUREMENT OF EMOTION.

By S. WHATELY SMITH, M.A., Editor of *Psyche*. London: Kegan Paul. 1922. Pp. 184. 10*s*. 6*d*.

THE psycho-galvanic reflex is a change in bodily resistance to electrical conduction observed in subjects to whom stimuli are experimentally applied. Veraguth in 1907 combined the word association test with observations on the reflex, the practical uses of which Golla and Prideaux have shown in this country. Mr. Whately Smith's experiments involve thousands of observations, and he correlates the results with purely psychological conclusions already reached by other observers; for example, he shows that to forget items of experience that one would expect easily to remember is of the nature of repression and due to the negative affective tone associated with the forgotten material. The author finds that the affective tone of a word as detected by the psycho-galvanometer is exerted in opposite directions: the word may be better remembered than a less intensely toned word or may be forgotten more quickly. Hence, he deduces the presence of a negative and a positive tone, though the reflex itself gives no indication of these qualities.

In reaching this conclusion and others, he has brought methods of scientific measurement to bear upon factors otherwise capable only of subjective valuation. The title of the book, however, is questionable: the psycho-galvanic reflex measures something, but there are several bridges to be built before we can assume that this something is emotion or has a one-to-one correlation with it.

CHEMICAL PHYSIOLOGY.

Fundamentals of Biochemistry in Relation to Human Physiology. By T. R. PARSONS, B.Sc. Lond., Demonstrator in Physiology in the University of Cambridge. Cambridge: W. Heffer and Sons, Ltd. 1923. Pp. 281. 10*s*. 6*d*.

THIS bird's-eye view of theoretical chemical physiology provides interesting reading to the initiated, and there does not seem any reason why it should not prove of equal interest to the student who can be persuaded to devote time to its perusal. A certain amount of overlapping with pure chemistry and pure physiology is inevitable in the presentation of a clear picture of what the author prefers to call biochemistry, but which might correctly be called chemical physiology. Mr. Parsons has a gift of clear expression, and has succeeded in introducing a remarkable quantity of information in this elementary book; the summaries, some of them in the form of tables, should prove very useful to students. The book appears from the following extract to have been rather a long time in the press: "It might be thought that the simplest and most obvious treatment for diabetes would be to supply the missing substance formed by the islands of Langerhans, but so far no extract of pancreas has been obtained which contains the active principle in a suitable form." The rather inept quotations which head some of the chapters might well be omitted from a future edition. The short bibliography at the end of each section will enable the student to pursue the subject further if he so desires. This is a book to read, and have.

JUNIOR REGIONAL GEOGRAPHIES.

By W. H. BARKER, B.Sc., F.R.G.S., and LEONARD BROOKS, M.A., F.R.G.S. Part II.: The British Isles. University of London Press. 1923. Pp. 174. 2*s*.

THIS is the second volume of a new series of regional geographies intended for use in the upper classes of elementary schools and in the lower forms of secondary schools. The British schoolboy may regard himself as happy in having such an attractive guide to his home land. The manual is divided into 15 chapters, starting with the home as the central point of geographical interest, passing on to the consideration of islands and seas, highlands and lowlands, food and climate, then to the features of special areas, and concluding with two chapters on communications and the relations of Britain to the world outside. There are 48 illustrations and maps, the most striking being a series of typical landscapes taken from the air; an agricultural village, a highland scene, a garden suburb, the surroundings of a dockyard. The book should realise the authors' hope that it will prove useful wherever young students are making a first regional study of their own country.

LA GOUTTE.

Sur quelques points controversés ou mal connus de son histoire. By CH. FINCK. Paris: L'expansion Scientifique Française. 1922. Pp. 80. Fr.4.50.

THIS little pamphlet sets out the views of one of the physicians at Vittel, on the pathology of gout and other chronic arthritic diseases. Whilst depending more on clinical than on post-mortem experience, and so lacking that exactitude which is required of data if final judgment is to be made, it will be read with interest by those who have made a special study of balneotherapy.

THE OMNIPOTENT SELF.

By PAUL BOUSFIELD, M.R.C.S. Eng., L.R.C.P. Lond., Physician to the London Neurological Clinic. Author of "The Elements of Practical Psycho-analysis." London: Kegan Paul. 1923. Pp. 171. 5s.

WRITTEN in popular style, this book gives a brief account of unconscious processes before coming to the main theme, which is that many troubles in life depend upon Narcissism or unwitting selfishness. This is to be overcome by a method of introspection—claimed to rest upon psycho-analytic principles—followed by a process of readjustment, aided by auto-suggestion along the lines made familiar by Mr. Coué. The efficacy of the method does not seem to be established, but the attempt is not likely to do harm. The fulsome recommendation on the wrapper is unsuitable in connexion with a book written for lay readers by a medical man, and doubtless the author is not responsible therefor.

JOURNALS.

IN the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE for January Surgeon Rear-Admiral J. Shand, as a result of his long experience, tells us that in China the round worm is a powerful agent in the extension of tuberculosis, and that many other diseases which are met on that station can also be cured by the administration of santonin by itself. He quotes particularly cases of neuritis and asthma of two or three years' standing.—Surgeon Commander R. H. McGiffin is anxious that the treatment of syphilis shall be standardised, somewhat on the lines proposed by Surgeon Captain L. Kilroy in an earlier number (THE LANCET, Dec. 31st, 1921). In his own ship he gives to every man with a positive Wassermann reaction two sulfarsenol courses, each of eight fortnightly subcutaneous injections (0·48 g. in each of the first six, 0·6 g. in each of the two later); each course is followed by three months' rest, when a W.R. is again taken. Two consecutive negative W.R.'s must be obtained before the patient is discharged as needing no more treatment. In the 40 cases of which Commander McGiffin reports he got his negative results in all but one, and that patient left the ship too soon—in four months. Intravenous medication is recommended in hospital, but subcutaneous in ships, the method being more convenient and painless. As to intramuscular injection, "patients sooner or later refuse to have it."

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XX. January–March, 1923.—Dr. Leonard Findlay contributes a paper on the Treatment of Congenital Hypertrophic Pyloric Stenosis: Medicine Versus Surgery, based on observations on 62 hospital cases and 18 cases seen in private practice. His conclusions are as follows: 1. Spasm of the hypertrophied pylorus is the most important factor in causing the symptoms. 2. The results of treatment are invariably better in private than in hospital practice. 3. Medical measures give as good, if not better, results than operation. 4. Operation should probably be reserved for the youngest cases, and for those seen soon after the onset of the symptoms. 5. The great danger to be avoided in any form of treatment is underfeeding. 6. The infant with congenital hypertrophic pyloric stenosis requires constant and individual care.—Dr. J. D. Rolleston records a case of Hereditary Tylosis, otherwise known as keratodermia palmaris et plantaris hereditaria, keratoma palmare et plantare, congenital ichthyosis, and acrokeratodermia, of which he remarks that though the condition is well known to dermatologists, it has received little attention in pædiatric literature. The patient, a girl aged 2 years, showed a symmetrical thickening of the epidermis of the palms and soles, the thickening ending abruptly at the border of the palmar and plantar surfaces, and separated from the normal skin by a narrow pinkish halo. The condition had been first noted a few months after birth, and had gradually become more pronounced. There were no skin lesions elsewhere. The father was similarly affected, and the child represented the fifth generation affected. Rolleston has collected eight other examples of tylosis occurring in five generations, and alludes to its endemic occurrence in the island of Meleda, off the coast of Dalmatia, when it was first mistaken for leprosy.—Dr. G. Flöystrup, of Copenhagen, reports a case of Rubella Without Rash. A boy, aged 9, after exposure to infection at school developed all the symptoms of rubella, including cervical and occipital adenitis, coryza, conjunctivitis, and slight rise of temperature, but no eruption apart from a very few pale macules on the cheeks of a few hours' duration. The diagnosis was confirmed by the patient's brother developing rubella a fortnight later.—Dr. John Thomson contributes notes of a case of Extreme Recurrent Drowsiness in a Child, apparently due to hepatic disturbance. During the first six years of life the patient had attacks of dropping off to sleep in the daytime at periods varying from three weeks to six months. During the intervals he was perfectly well and happy. On examination during an attack the only abnormal signs found were a thick brown fur on the tongue, definite increase of cardiac dullness to the right, with visible epigastric pulsation and enlargement of the liver (three fingers-breadth), which was quite soft. Under treatment with bicarbonate of soda, nux vomica, and infusion of gentian, alternating with small doses of calomel, the attacks grew less frequent and ceased altogether. At the present time the patient is a strong athletic youth of 21, with a normal heart and liver.—Dr. F. Parkes Weber records a case of Raynaud's Syndrome in a Non-Syphilitic Infant with a remarkable family history. The patient was a female infant, aged 12 months, who had been suffering from recurrent attacks of Raynaud's syndrome since the age of three months. The father suffered from recurrent attacks of headache and vomiting, one brother of the father had asthma, another brother and sister had died of diabetes mellitus, and the patient's paternal grandfather, whose case had been reported in THE LANCET,[1] had thrombo-angiitis obliterans.—Dr. G. H. Sutherland describes the autopsy on a case of Congenital Aneurysm of the Pulmonary Artery, in which the diagnosis made during life was confirmed. Other congenital defects present were a supernumerary toe, fusion of the fourth and fifth digits, and a double nail in the fifth digit.—Dr. F. J. Poynton and Mr. W. Williams report a case of Sudden Death from Blocking of the Air Passages by a Caseous Gland in a boy of 9 years.—In a paper entitled Albuminuria in a Family of Children, Dr. Hazel H. Chodak Gregory gives an account of a family of four children suffering from nephritis, two at least of whom were born with albuminuria. The urine of the father and mother was free from albumin. There was no history or other evidence of congenital syphilis in the children, and the Wassermann reaction tested in the mother and three of the children was negative.—The abstracts from current literature are devoted to genito-urinary diseases and dermatology.

[1] THE LANCET, 1908, i., 152; 1913, i., 169.

THE LANCET.

LONDON: SATURDAY, APRIL 7, 1923.

INSANITY AND THE CRIMINAL LAW.

THE responsibility of insane persons guilty of offences against the criminal law has always been more or less a matter of dispute between the legal and the medical professions, and the question has now entered on a more acute phase. Some eight months ago the action of the Home Secretary in the case of RONALD TRUE, who was sentenced to death for the murder of a prostitute and was reprieved after a statutory inquiry into his mental condition, gave rise to an emotional expression in the public press, in Parliament, and even on the judicial bench. The reaction on public feeling showed a curious resemblance to the effect produced in the middle of the last century by the acquittal, on the ground of insanity, of the lunatic M'NAUGHTON, who murdered Sir ROBERT PEEL'S private secretary. Nor was this the only feature common to the two causes célèbres. In the M'Naughton case the House of Lords took the unusual course of inviting from the bench of judges a statement of the law regarding the limits and the mode of presentation of the plea of insanity in criminal cases; and the answers of the judges to the queries put to them have become historic, for they furnished the basis of the test of responsibility which is accepted as authoritative in the English courts down to the present day. In the similar circumstances consequent on the discussion of the True case, and perhaps having in mind the M'Naughton precedent, the Lord Chancellor some months ago appointed a committee of legal and administrative experts, under the chairmanship of Lord Justice ATKIN, "to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and whether any and, if so, what changes should be made to the existing law and practice respecting cases falling within the provisions of Section 2, Sub-section 4, of the Criminal Lunatics Act, 1884." The importance of a clear and adequate presentation of medical opinion on the matters comprised within these terms of reference was at once recognised both by the Committee and by the medical profession; and two medical organisations—the British Medical Association and the Medico-Psychological Association of Great Britain and Ireland—accordingly appointed representative subcommittees to discuss the matters at issue, and to prepare memoranda of evidence for submission to the Lord Chancellor's Committee. The text of one of these memoranda is reprinted on p. 717; the other may be read in the *British Medical Journal* of March 24th. It may, perhaps, be questioned whether on such an occasion the expression of medical opinion would not have been more effective if it had been embodied in a single document, rather than in two separate memoranda which would appear to have been prepared without joint consideration, and even to be adjusted to different points of view.

The present position regarding the criminal responsibility of insane persons is hardly of practical importance except in capital cases, for it is only in such cases that there is a radical and irrevocable difference between the modes in which society reacts against the sane and against the insane offender; and it may be added that it is chiefly as potential homicides that the insane menace public security. This limitation was clearly in the mind of the Lord Chancellor in appointing the Atkin Committee, for the procedure under the Criminal Lunatics Act of 1884, to which attention is specially directed in the terms of reference, deals exclusively with persons under sentence of death. The memoranda take a much wider range, but it will not be necessary here to go beyond the particular problem of responsibility in cases of homicidal crime. Under the law as it exists at present, the question of the mental state of a person accused of murder may be raised on his indictment, when his fitness to plead and to understand the proceedings of the trial is decided by a jury impanelled for the purpose. Should he be found unfit to plead by reason of his condition at the time of the arraignment, he is ordered to be detained as a criminal lunatic, and no evidence is considered in proof of his guilt of the alleged act. If, on the other hand, he is found fit to plead, or if no question of his fitness is raised, the trial proceeds. If the accused now pleads guilty, he must be condemned to death, even if he be obviously insane, unless the judge—by a stretching of his authority for which there does not appear to be much legal warrant—refuses to accept the plea, and enters a plea of "Not guilty." When the plea of "Not guilty," whether entered with or without the consent of the accused, is based on a defence of insanity, it is necessary, according to the authoritative test, founded on the so-called M'Naughton Rules, to prove "that at the time of committing the act, the party accused was labouring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong." The absurdity of this test, which makes disorder of intellect the sole criterion of insanity, has been the theme of psychiatric criticism since its formulation, and it is hardly questioned, even by jurists, that its strict application would lead to the condemnation of the majority of insane murderers. It does not have this effect, simply because most judges, when satisfied that the offender is really a lunatic, ignore or evade the test; and if, as occasionally happens, a judge fails to exercise common sense in this way, the jury will frequently reject his direction and return a verdict of "guilty but insane." In the comparatively few remaining instances, where an insane murderer has been sentenced to death, the Home Secretary has power, under the section of the Criminal Lunatics Act referred to above, to order an expert inquiry into the prisoner's mental condition, and if such inquiry shows that the convict is insane, the sentence is not carried out. In practice, therefore, there is little or no risk of a lunatic being hanged; and in fact a Committee of the Medico-Psychological Association, which considered this question exhaustively in 1896, failed to find, within the period covered by its inquiry, any instance of such a miscarriage of justice. This Committee reported that, while disapproving the existing legal test of insanity, they were unable to make any suggestions for amending the law. It is significant in connexion with the then attitude of the psychiatic experts to note that the Atkin Committee had its origin in a sense of dissatisfaction with the state of the law, not on the ground of its undue severity, but rather from a feeling that its excessive laxity threatened the public safety.

It is thus the lawyers and not the doctors who in the present instance are the primary advocates of change. This fact does not appear to have been kept adequately in view in the proposals put forward in the two medical memoranda; and it is probable that legal critics may complain that neither of these documents offers any constructive suggestions, except in regard to the mode of presenting expert evidence, which go to meet the admitted difficulty of justice in dealing with offenders on the borderline between sanity and insanity. The absence in this connexion from both memoranda of any reference to the principle of diminished responsibility, which is being adopted as a partial solution of this difficulty in other countries, weakens the statement of the medical position. On the other hand, both subcommittees have addressed themselves to the task of amending the legal test of responsibility; the memorandum of the British Medical Association proposes to add a clause recognising morbid incapacity of control as a ground of irresponsibility, and also suggests a modification of the wording of the test in regard to the power of knowing and appreciating the character of the criminal act. It is always rather risky for medical men to involve themselves in the subtleties of legal phraseology, and it is not unlikely that some member of the Lord Chancellor's Committee may be inclined to make caustic comment on the proposal that a murderer should be held irresponsible on account of mental disability, if such disability, though not interfering with his knowledge of the nature and quality of his act, prevented him from "appreciating the circumstances in which it is done"—such a circumstance, e.g., as the presence of an unobserved witness. The Medico-Psychological subcommittee seem to have been better advised in deprecating any analytical test of legal insanity, and in proposing that, instead of the M'Naughton Rules, the judge should put the issue to the jury in the form of three questions: (*a*) Did the prisoner commit the act alleged? (*b*) If he did, was he at the time insane? (*c*) If he was insane, has it nevertheless been proved to the satisfaction of the jury that his crime was unrelated to his mental disorder? This way of formulating the issue would allow the expert witness to give his evidence in his own language without having to obscure and distort it by translation into terms of legal technicality alien to his training and manner of thought, and it would thus make his statement of facts and conclusions far more accessible to the common sense of the jury. At the same time, without introducing any greater laxity than already exists in practice under the present system, it would remove from the English law the reproach of maintaining an obsolete, unscientific, and ineffectual formula.

A matter of equal, if not greater importance than the terms of the legal test of insanity, is the mode in which expert evidence is put before the court in cases involving this issue. On this point there is a marked divergence of opinion between the two medical subcommittees; the memorandum of the British Medical Association insists rightly and forcibly on the defects of the existing system by which expert evidence of insanity is given by ex-parte witnesses on either side, to the confusion of judge and jury, and, in the case of persons without means, possibly to the prejudice of justice; it advocates instead the provision of machinery for the independent and impartial mental examination of accused persons by a member or members of a panel of psychiatric physicians of recognised standing, whose report should be furnished to the prosecution and to the defence, and should be supported by personal evidence in court. For some undisclosed reason the idea of impartial expert witnesses does not seem to have commended itself to the Medico-Psychological subcommittee, who devote merely a few lines to it in their memorandum, rejecting any proposal of a system of medical assessors, but admitting that "it might be possible" to appoint a panel of accredited experts, to be employed at the discretion of the court, but without interference with the existing system of ex-parte evidence. Both subcommittees are in agreement in opposing any alteration of the section of the Criminal Lunatics Act which empowers the Home Secretary to institute a statutory inquiry into the mental condition of prisoners under sentence of death. As a safeguard against possible miscarriages of justice some procedure of this sort is obviously essential, and if the enactment establishing it were repealed, popular clamour would insist on its restoration on the occurrence of the first case of doubt as to the sanity of a condemned murderer.

The memoranda also make a number of recommendations, many of them rather debatable, on matters of subsidiary importance, such as the right of appeal from the verdict of "Guilty, but insane," and the position of those unfit to plead. These memoranda represent the outcome of much painstaking labour, and they deal with questions in which the medical profession has a serious and responsible interest. On that account the conclusions will be sympathetically as well as carefully scrutinised, and any criticisms which may be passed upon them will, no doubt, be tempered by a due recognition of the extremely difficult and complex character of the questions which the subcommittees had to consider.

TUMOURS OF THE BLADDER.

URINARY disturbances of any kind, apart from what innately bad qualities they possess, bring in their trail an immense amount of physical and mental suffering. If they are irremediable, as so often happens when malignant disease has been allowed to progress too far, the plight of the victims is truly pitiable. New growths of the bladder must be included amongst the very grave urinary diseases. They possess certain characters which are seen scarcely anywhere else in the body. The papillomata, which are quite benign and local growths, show an extraordinary capacity for grafting portions of their substance on other parts of the bladder mucosa. They exhibit almost the infective characteristics of warts of the skin, in the manner in which they will give rise to satellite lesions, but, unlike the cutaneous papillomata, they unfortunately show no propensity to sudden and inexplicable disappearance. Another notable feature of bladder tumours is the fact that, to the naked eye, a malignant growth may be indistinguishable from a simple papilloma, and even under the microscope differentiation becomes possible only when the growing infiltrating margin at the base comes under view. A fortunate circumstance is that distant secondary growths occur late, or perhaps local spread gives rise to early symptoms and so calls attention to the presence of some bladder lesion. But though hæmaturia, the cardinal symptom of bladder tumours, occurs early, it is very often only an evanescent manifestation and so is apt to be disregarded.

In his lecture delivered at the Mayo Clinic, and printed in three recent issues of THE LANCET, Mr. FRANK KIDD reiterates his teaching of years, that hæmaturia necessitates cystoscopy. Even in these days the practitioner does not always follow this course, for he knows very well that many cases of

hæmaturia of renal origin, without demonstrable lesions, occur once, never to reappear. Nevertheless this is a policy dangerous to pursue, for delay may render radical treatment difficult, fraught with great risk, or altogether impossible. Mr. KIDD'S views on the treatment of vesical tumours based on a personal experience of 162 cases claim great respect. Few surgeons have dealt with so many patients of whom they have accurate notes of the early and remote after-histories. That 90 per cent. of simple papillomata may be cured by Beer's fulguration method is an immense advance on the old intravesical excisions, where secondary implantation almost invariably occurred. Mr. KIDD favours the destruction of papillomata if possible at one sitting under general anæsthesia, in contrast with the multiple cauterisations which many urologists carry out. What is notable also, is the possibility of curing completely an early malignant growth by diathermy through the cystoscope. Other surgeons of less experience can corroborate this statement, although microscopic demonstration of the nature of the tumour is impossible, as it is destroyed. They would be certain to confirm the observation that some small malignant papillomata are very resistant to diathermy. The results Mr. KIDD has obtained by operative removal of malignant tumours, using a modified Squier's technique, are remarkable: 11 out of 28 patients are known to be alive and well from one to 11 years after operation. This result is not possible of achievement by the older technique of excision after cystotomy. It renders the outlook for the unfortunate sufferer from a malignant tumour of the bladder far less grave than it is commonly believed to be.

RECENT WORK ON BLOOD-SUGAR.

CARBOHYDRATES and proteins take precedence in biological chemistry over other compounds, inasmuch as they are essential to life and growth, and an additional stimulus was added to the study of carbohydrate metabolism when WILLIS showed that diabetes mellitus was associated with glycosuria. The landmarks in the growth of this knowledge are too well known to recapitulate here. Recently, however, experimental data have been published which substantially modify the existing views. First and foremost, under the inspiration of Prof. J. J. R. MACLEOD, the Toronto School have been able to produce an active pancreatic preparation, the injection of which reduces the blood-sugar and produces an intermission in the glycosuria of diabetics. Insulin is in fact the first striking success in a series of investigations, begun by MINKOWSKI when he produced diabetes by depancreatising animals, and hitherto almost fruitless. The comparative scarcity of ox pancreas has naturally led laboratory workers interested in insulin to look around for a more abundant raw material. What more natural than that they should turn to yeast, whose enzyme has been known for years to break up glucose into carbon dioxide and alcohol, a process which probably occurs also in the body. Long before the announcement of insulin physicians saw in yeast the cure of diabetes; but apart from rendering patients extremely uncomfortable with eructations, no therapeutic effect followed its administration. Early this year[1] some experimental work was published from the Biochemical Laboratory at Cambridge on solid extracts of yeast. In this Messrs. L. B. WINTER and W. SMITH put forward a new theory of the causation of diabetes. They state that the sugar present in normal blood is an unstable form, which they call γ-glucose. In diabetic blood they find only stable forms of glucose, and from this they conclude that the pancreatic internal secretion—and probably insulin—act by converting the stable into the unstable glucose, thus rendering it suitable for metabolism. They also suggest that yeast may act in this way, for injections into rabbits lowered the blood-sugar and put rabbits into convulsions. These experiments raised the hopes of clinicians, who could see large quantities of this "yeast insulin" being available for clinical trial in the near future. The investigators themselves were guarded in their statements, and much work remains to be done before definite conclusions can be reached. Substances, such as peptone and certain proteins, all of which are contained in yeast, are known to lower the blood-sugar on injection.

With regard to the theory of stable blood-sugar in diabetes it is true that glucose, containing as it does asymmetric carbon atoms, can exist in many isomeric forms. TANRET, who discovered two distinct forms possessing different rotatory powers, showed that when α-glucose was dissolved in water, its rotatory power fell to a constant figure, and that β-glucose, when treated similarly, gave a rising rotatory power. He also found a third substance, which he called γ-glucose, of constant rotatory power. But as knowledge grew it turned out that in solution α- and β-glucose changed into each other, until a definite point of equilibrium was reached, and that γ-glucose was nothing more nor less than a mixture of these two substances in equilibrium. This fact, now admitted by TANRET himself, is difficult to reconcile with the new theory of diabetes. The constant change in solution of carbohydrates is a beautiful example of the adaptation of organic compounds to the use of the living organism. Enzymes are extraordinarily specific with regard to their action on these carbohydrate isomers. One enzyme will only act on β-glucose, and, but for this process of mutarotation, no carbohydrate metabolism would be possible. If only the α form is supplied, this goes into solution and at once dissociates into β-glucose, until a definite equilibrium point is reached between the two bodies. The enzymes then remove some of the metabolisable compound, with the result that the equilibrium is upset; more of the α form dissociates to the β compound, which in turn is removed. Thus the process goes on until all has been metabolised. No enzyme is necessary to convert α- into β-glucose, for nature has already provided a spontaneous means in this process of mutarotation. Had Prof. LOWRY, speaking at the recent Pasteur evening of the Royal Society of Medicine, overlooked this phenomenon when he condemned ALICE to a glycosuric death when she entered the realm beyond the looking-glass? For he pointed out that her enzymes being reversed could only act on lævo-compounds. But even if the looking-glass did not also reverse the carbohydrate molecules—and why should it not?—mutarotation must have saved ALICE from becoming diabetic.

On p. 715 of our present issue Dr. H. F. MOORE gives a useful conspectus of the views at present current as to the physiological effects which insulin has on the body. It has now been placed beyond doubt that insulin reduces the blood-sugar; unless, indeed, its administration is controlled the reduction may go so far as to endanger the well-being and even the life of the animal. In the diabetic, coincident with the reduction of the hyperglycæmia, there is a reduction of the formation of acetone and other

[1] Brit. Med. Jour., Jan. 6th, 1923.

disorderly products of metabolism. It is easy to see that in insulin the practitioner may have a powerful drug with which to control diabetes. The cost of the preparation is high, but progress is being made in perfecting the preparation, and it may confidently be stated that in the near future a supply of potent insulin will be on the market for general use. But the scientific side of the investigation should not be forgotten. We have no certain knowledge as to what happens in the body under the influence of insulin. Blood-sugar is reduced and the irregular metabolism of fat is corrected, but we do not know what becomes of the sugar. It is often stated that the sugar is oxidised, but there is no unequivocal evidence in support thereof. The statement probably originates from the belief, long current among physiologists, that diabetes is a disease in which the body is unable, more or less, to oxidise glucose, and that the degree of diabetes is proportional to this disability. This statement again is not based upon perfectly satisfactory evidence; or rather, the evidence available is susceptible of other interpretations. It is known that the liver of diabetic patients is unable to store glucose, and it is possible that the principal effect of insulin lies in its power of restoring this capacity. There is another and wider aspect of the question. Enthusiasm for a new and valuable remedy for diabetes must not lead to any slackening of the search for the causation of the disease. It is possible to produce an artificial diabetes in animals by partial or total excision of the pancreas, and definite lesions of this organ have been demonstrated in autopsies in diabetic patients. Further, the metabolism of sugar may undoubtedly be controlled by an extract of pancreas. Nevertheless, it is by no means certain that diabetes is invariably a disease of the pancreas. It must be admitted that in a large proportion of patients dying from diabetes no lesions of the islets of Langerhans can be discovered, though, taking into consideration the fact that diabetes is not an acute disease, their presence might well be expected were the pancreas the organ essentially at fault. There is a gap between the results obtained by what is crude experiment and the accumulated post-mortem observations on cases dead of the disease. The morbid processes are evidently much more subtle than is generally understood, and until the experimental results can be fitted logically into the pathological picture the essential pathology of the disease will remain a mystery.

ROYAL PORTSMOUTH HOSPITAL.—The report for 1922, presented at the annual meeting of subscribers held at the Town Hall on March 22nd, stated that as the result of the efforts of the Southsea Carnival and Mayor's Charities Committees the sum of £8000 had been raised. The ordinary income amounted to £15,982 10*s.* 8*d.* and expenditure to £20,071 13*s.* 2*d.*, leaving a deficit of £4089 2*s.* 6*d.* The sum of £939 9*s.* was received from surplus funds of approved societies. The Voluntary Hospitals Commission granted £1965. A large proportion of the beds is devoted to surgical work; the applications for surgical treatment far outnumber those for medical relief. The work in the out-patients' department has steadily progressed. The department is increasingly used as a consultative clinic. The venereal diseases department has again to record a decreased number of new patients and decreased attendances of both male and female patients. The incidence of venereal disease in Portsmouth appears to be diminishing; for this department 3480 pathological examinations were made; for the general work of the hospital there were 1185 examinations. The average cost per bed occupied was £111 7*s.* 5*d.*, and the average cost of each in-patient per week was £2 2*s.* 8½*d.* The borough treasurer, who had investigated the hospital expenditure with a view of ascertaining whether the funds were dispensed economically or extravagantly, reported that the cost compared very favourably with that at other similar hospitals, and that the developments during recent years had brought this hospital to a high standard of efficiency.

Annotations.

"Ne quid nimis."

SIR JAMES DEWAR.

BY the death of Sir James Dewar, F.R.S., Director of the Davy-Faraday Research Laboratory, at the age of 81, the world of chemistry and of physics loses one of its most ingenious experimenters. At the time of his death he was both professor of experimental philosophy at Cambridge and professor of chemistry at the Royal Institution, two posts which he had held for very nearly fifty years. It was at the latter institution that Sir James Dewar did the experimental work which was to bring him fame, and the work of a public nature in connexion with the famous lectures given there must have made him known to thousands of scientific people. The Friday evening lectures of the Royal Institution have filled a unique place among scientific activities and have been an inspiration to many, especially in their earlier years. It was due in very large measure to the care that the Director took that the lecturer's experiments should not fail, that the high standard set in these lectures was maintained for so many years. A first experience of an evening at the Royal Institution is connected in many minds with the presence of the small, alert, grey-headed figure of the Director, alert to see that all went well.

Dewar's life was practically devoted to experimental work and he tackled many problems necessitating the highest skill for their solution. He is best known for his early works on the liquefaction of the rare gases, and he was very largely responsible for the rapidity with which the list of "permanent gases" was reduced until hydrogen was the last remaining one, and this he had the satisfaction of liquefying. Shortly after this success, the gas helium was discovered and great difficulty was found in reducing it to the liquid state. It was done in the cryogenic laboratory at Leyden under Prof. Kamerlingh Onnes in 1908. The production of liquid air and other gases for commercial purposes was made possible by Dewar's invention of the vacuum vessel, which had quite a long innings in the laboratory before its adoption as a domestic article. His work on the attainment of low vacua by means of charcoal showed that his experimental genius was equally well able to deal with gas problems at either end of the scale of pressure. It is probably true to say that the problems which were solved at the height of Dewar's powers in the Davy-Faraday Laboratory of the Royal Institution, in association with the staff which he gathered about him, could have been tackled nowhere else in the country. Some of his early work had a medical aspect, for he collaborated with Prof. McKendrick on the physiological actions of light; for the rest it was one long record of scientific work of a high order, exhibiting a strong inventiveness throughout. He was the joint inventor of cordite.

He received many honours, including the Rumford, the Davy, and the Copley medals of the Royal Society, the Lavoisier prize of the French Academy, and the Hodgson medal of the Smithsonian Institution.

THE LONDON SCHOOL OF HYGIENE.

THE realisation of the London School of Hygiene comes a stage nearer with the announcement that the King and Queen are expected to lay the foundation-stone of the building some time during the month of May. It is already ten years since the institution of such a school was pressed upon the University of London by its Board of Studies of Hygiene. A recent conference between representatives of the Ministry of Health, the University of London, and the Rockefeller Foundation decided the appointment of a transitional executive committee to arrange for coördination with other interested authorities, to evolve the organisation in detail of the School, and to

develop such detailed plans that construction can be begun. The Rockefeller Foundation having undertaken to provide immediately a sum not exceeding £4000 per annum towards the salary and expenses of a director, a provisional appointment to this office will shortly be made, the occupant to act in an advisory capacity to the transitional executive committee. The official public health service in this country is satisfied of the immense value to the health of the community likely to be achieved by the establishment of a central endowed school of hygiene, which also carries in its hands the future of the London School of Tropical Medicine; for it is unthinkable that the great centre of tropical study, built up on the Mansonian tradition, will not become an integral part of the larger scheme. It has, we believe, already been accepted that the Tropical School is to retain its curriculum and policy under the guidance of its present Board of Studies and School Committee. Departmental division into pathology, helminthology, protozoology, and entomology has already produced great results, and progress has been fostered by continuous research work in the tropics and frequent expeditions. No doubt the clinical side of tropical medicine will be best served by leaving the hospital for tropical diseases where it now is, to function as a post-graduate teaching hospital. For this purpose some improvement in equipment will be necessary, so that clinical teaching may be carried out to the best advantage. The appointment of a liaison officer between the Tropical Hospital and the School of Hygiene will be desirable, until the link between the two becomes so close as to render this superfluous. We have no doubt that both as to the personnel of the Executive Committee and the personality of the temporary director, these great and not necessarily conflicting interests will be considered.

PRACTICAL POINTS IN THE ADMINISTRATION OF ANTIDIPHTHERITIC SERUM.

COMMENTING on the recent recommendation of the Ministry of Health that 8000 units of antitoxin should be given in every suspected case of diphtheria without waiting for the bacteriological confirmation of the diagnosis, Dr. Claude Ker, in an article which appeared in our columns last week, complains that the high mortality of diphtheria is due to a want of appreciation on the part of the general practitioner of the importance of early injection of antitoxin. This reluctance has been aggravated within the last ten years by the bugbear of anaphylaxis, the risks of which have been greatly exaggerated. Although large initial doses are necessary in severe cases, in mild and moderate attacks a very much smaller dose is required. Dr. Ker makes the valuable suggestion that 2000 or 3000 units should be injected as a routine practice by the practitioner whenever he thinks it necessary to take a swab, and is convinced that such a practice would be followed by a considerable fall in the case-mortality of diphtheria. The intravenous injection of diphtheria antitoxin, on which we publish a note in this issue by Dr. Poul Iversen, of the Blegdams Hospital, Copenhagen, has been practised for many years on the Continent and in the United States, but has never been very popular in this country, although it was recommended more than 20 years ago in THE LANCET by Dr. D. L. Cairns,[1] and two years later by Dr. J. Biernacki and Dr. J. C. Muir.[2] The reluctance to employ what is theoretically the best method, inasmuch as it enables the antitoxin to be introduced directly into the circulation, is due to a number of causes. In the first place, intravenous injection in small children, who constitute the majority of the severe cases in which this method is specially indicated, is often fraught with considerable difficulty and may require dissection under an anæsthetic, as was done by Biernacki and Muir. It is for this reason that Dr. Ker reserves intravenous therapy in diphtheria for adults and older children, whose veins allow the easy introduction of a needle. Dr. Iversen does not give any details as to the ages of his patients, but implies that the technique does not present any difficulties. Secondly, a special preparation of antitoxin is required, containing a lower percentage of antiseptic than is usually employed. In the present series 1 per cent. chinosol was used in place of phenol. Thirdly, the possibility of a severe reaction, which occurred in 27 patients, or 7 per cent. of Dr. Iversen's cases, acts as a deterrent. In most of the cases in the present series the symptoms took the form of a rigor lasting from 10 to 30 minutes, during which the pulse was small and the patient blanched. More rarely the rigor was absent and the condition resembled a mild collapse. The symptoms, however, were only transient, and were relieved by the injection of camphor. Anaphylactic symptoms, consisting in a rigor or collapse, profuse urticaria, œdema of the face, and pain in the joints, are especially likely to occur after intravenous injection in cases which have received serum some time before, nor are the symptoms always prevented by a desensitising dose. In view of all these drawbacks it is not surprising that intravenous therapy in diphtheria has not found more supporters. Dr. Iversen, however, writes with such conviction of the superiority of intravenous injection, that we should welcome a record of the experience of those of our readers who have had an opportunity of making similar observations.

[1] THE LANCET, Dec. 20th, 1902, p. 1685.
[2] Ibid., Dec. 24th, 1904, p. 1774.

THE DICKINSON SCHOLARSHIPS.

A LARGE capital sum, conveyed to trustees under the will of the late Mrs. Conradine Sophia Dickinson, of Bournemouth, has enabled them to institute a number of scholarships in the Manchester Medical School, which are shortly to be awarded for the first time. The Anatomy Scholarship is of the annual value of £25 awarded for one year to the student who distinguishes himself most in the first-year course in anatomy at Manchester University. The Surgery Scholarship of £75 is offered in alternate years to graduates in medicine and surgery of Manchester University, the successful candidate undertaking to carry out some piece of special research approved by the medical board of the infirmary. The Pathology Scholarship of £75 is similarly open to graduates who undertake to work for one year in the pathological laboratory of the University under the direction of the professor of pathology. In addition to these a Research Travelling Scholarship in Medicine, of the value of £300 tenable for one year, is available annually for a distinguished graduate of not more than three years' standing. Candidates are required to submit to the trustees evidence of ability and special knowledge, and may have to undergo a special examination. The Travelling Scholar is required to undertake further study in original work at Paris or another medical school outside the United Kingdom. Applications for any of these scholarships should be made to Mr. F. G. Hazell, Secretary to the Trustees at the Royal Infirmary, Manchester, from whom a copy of the regulations can be obtained.

HOSPITAL ALMONERS.

THE Institute of Hospital Almoners in its annual report just issued pays tribute to the pioneer work of the late Sir Charles Stewart Loch, Tooke Professor of Economic Science and Statistics in King's College, London. It was Loch's intimate study of the working of the out-patient departments of London hospitals which led to the movement for social service in connexion with hospitals and resulted in the first appointment of almoners. The report raises the question whether, at a time when hospital finance is so difficult, it is justifiable to spend money on an almoner's department, and it answers the question by demonstrating how the employment of experienced people will readily recoup a hospital for the additional outlay. The Institute itself sets a high standard in regard to training, and only ten certificates were issued during the year 1922, although now, as always, the demand for trained almoners exceeds the supply.

The Council of the Institute is confident that not enough women are entering upon this work to fill the vacancies that are likely to arise. The course of training begins in the spring of each year, extends over a minimum of two years, and involves an inclusive fee of 40 guineas. The first four months are spent in an office of the Charity Organisation Society in London; the next nine months under the direction of the Ratan Tata Foundation in acquiring a sound basis of theoretical knowledge; a practical year follows under the direction of an almoner at a hospital training centre, two months of which must be spent in visiting other hospitals, and one month in practical work outside the hospital, such as health-visiting or attendance at an infant welfare centre. At the end of this time the almoner should be in a position to form the desired link between the hospital and the home, and to lend such coöperation as may get to the root of the difficulty which has been the cause of the illness or hinders return to health. The difficulty may be economic or temperamental; it may require assistance for the family through a local relief agency, or be only a matter of adjustment after judicious inquiry. The work is strenuous and, as the report suggests, is never likely to be highly paid; but several things point to the fact that such work is appreciated by those in a position to assess it. At the recent session of the Royal Academy of Medicine in Ireland Dr. Ella Webb drew attention to the indispensable character of the almoner's work at a venereal disease clinic. During the past year an almoner has been engaged by the Medical Research Council for special investigation into the records of social work done during the past seven years at St. Thomas's and York Road Lying-in Hospitals; and the Universities of Birmingham, Bristol, Glasgow, Leeds, and Liverpool have undertaken to take a part in the training of almoners for their own areas. It is significant that Sir Napier Burnett has accepted the presidency of the Institute.

LEAD POISONING IN INFANCY.

Dr. L. Emmett Holt, jun., of Baltimore,[1] who records an illustrative case which he observed in the Babies' Hospital, New York, remarks that, though much has been written on lead poisoning in older children, especially in Australia, the condition is very rare in infants. Arlidge in England and Constantin Paul in France, who made extensive studies of the families of workers in lead, found a very high percentage of stillbirths and a very high mortality from convulsions in the first three years of life. The number of mental defectives among the older children was also very large. Only a few undoubted instances of placental transmission of lead have been recorded. Paul admits that in many cases which he classified as congenital the poisoning may have continued after birth, through the mother's milk. Considerable quantities of lead were obtained by Ballard from the milk of a mother suffering from plumbism. A somewhat larger number of reliable reports of acquired lead poisoning in infants have been published. The sources of the lead varied considerably in different cases and consisted of toys, buns, sweets, paint on the mother's face, or ointment on the mother's breast. The prognosis in these cases largely depends upon the success with which the lead can be eliminated from the system. Dr. Holt's case was a female infant, aged 8 months, admitted to hospital for convulsions which had started on the previous day. Examination of the blood showed a moderate anæmia: red cells, 3,800,000; hæmoglobin 67 per cent. As the convulsions did not recur within the next 24 hours the mother was allowed to take the child home. Two days later repeated attacks of convulsions developed and the child was readmitted. Cutaneous tuberculin tests and the Wassermann reaction in the blood were negative. In addition to a moderate degree of anisocytosis and poikilocytosis and many nucleated red cells, a blood smear showed a remarkably large number of red cells with basophil stippling. This finding suggested the possibility of lead poisoning, and after prolonged search it was found that the mother who was suckling the infant had been applying an ointment, the chief constituent of which was lead acetate, to her breasts for eczema. The child's convalescence was slow, being complicated successively by otitis media, prolonged diarrhœa, and pyelitis, but gradual improvement took place. No means were taken to eliminate the lead from the system, the only treatment being administration of calcium bromide to control the convulsions, which continued at intervals for about a week.

[1] American Journal of Diseases of Children, March, 1923.

THE ANNUAL MEETING OF THE B.M.A.

ARRANGEMENTS have been completed for the holding of the ninety-first annual meeting of the British Medical Association at Portsmouth from Tuesday, July 24th, to Friday, July 27th, under the presidency of Mr. Charles Plumley Childe, F.R.C.S., senior surgeon to the Royal Portsmouth Hospital. The Presidential Address will be given on Tuesday evening and the annual exhibition of surgical appliances, foods, drugs, and books will be officially opened on the same day. The meetings of the scientific sections will be held on the next three following days. The Sections of Medicine, Surgery, Obstetrics, Pathology, and Neurology are each allotted three days; those of Ophthalmology, Public Health, Children, Laryngology, Radiology, Military Hygiene, and Tuberculosis each meet on two days, while Medical Sociology, Orthopædics, Venereal Diseases, and Anæsthetics occupy each a single session. The Section of Medicine has chosen for discussion on successive days (1) diabetes; (2) ætiology and treatment of heart disease in early life: (3) chronic bronchitis. Subjects for the other scientific sections have yet to be announced. The annual dinner of the Association will take place in the Town Hall on Thursday at 7.30 P.M. The honorary local general secretary of the gathering is Mr. C. A. Scott Ridout, M.S., "St. Elmo," Clarendon-road, Southsea. The annual representative meeting will, as usual, precede the annual meeting on Friday, July 20th, to commence at 10 A.M., Dr. R. Wallace Henry presiding, and continue on the three following week-days. Saturday, July 28th, will be set apart for excursions to places of interest in the neighbourhood.

DISTINGUISHED ABERDONIANS.

ALTHOUGH one need not take too seriously the ancient saying attributed to an Aberdonian: "Tak awa Aberdeen and sax mile roun and whar would you be"? yet he who has read Mr. McCulloch's list[1] of celebrated graduates of Aberdeen University will acknowledge in all sober truth that in the production of sons of light and learning the northern city has done her full share. In Mr. McCulloch's list we find the following names: Francis Adams, the translator of Hippocrates and at the same time a humble practitioner of medicine in a Deeside village; John Arbuthnot, wit and physician; Alexander Bain, philosopher; James Beattie, poet; John Stuart Blackie; Hector Boece (Boyce or Boethius), the historian; Robert Brown—that prince and pioneer of botanists; James Burnett (Lord Monboddo—evolutionist), John Burton Hill, historian; Sir Andrew Clark; Sir James McKenzie Davidson; Sir Patrick Dun, the Dublin physician; James Matthews Duncan; Hugh Falconer, a great palæontologist; Archibald Forbes; Sir William Fordyce (John Hunter's contemporary); Simon Fraser (Lord Lovat); Sir David Gill, astronomer; the gifted family of Gregorys; George Skene Keith; William MacGillivary, naturalist; Sir William MacGregor, physician

[1] Viri Illustres Universitatum Aberdonensium. Compiled by W. E. McCulloch. Aberdeen: W. and W. Londsay. 1923. Pp. 176. 3s. 6d.

and colonial administrator; Sir Patrick Manson; David Masson; James Clerk Maxwell (who, however, was merely a professorial bird of passage as far as Aberdeen was concerned); Peter Redfern; Alexander Reid, "the first lecturer on surgery in London"; Sir James Stirling; Augustus Désiré Waller. This is a list of which any university may be proud. We sincerely hope that young graduates of other universities will do as Mr. McCulloch has done, for we count it a sign of health when students of a university nurse the memory of distinguished graduates. We give the author full credit for being moved to compile this list as a labour of love. And yet, a remark he lets drop in his preface leaves us a little uncertain as to whether or not his motives may not have been a little mixed. We rather suspect he means "to down the southron," for it appears that a Cambridge undergraduate had cast aspersions on the ancient university of the north; the list is intended for the education of that undergraduate. But was the Cambridge undergraduate not merely in a playful mood when he challenged Mr. McCulloch?

THE MUSCULARIS MUCOSÆ.

THOSE medical historians who have had the advantage of living after the time of Harvey have frequently expressed astonishment that the complete circulation had remained undiscovered throughout so long a period. From Erasistratus to Fabricius all practical anatomists had been acquainted with the cardiac valvular arrangements and with the directions towards which the separate valves opened; yet the vision was kept from their eyes by virtue of that human truth, that we see as a rule only that for which we are looking, and they spent their energies in the effort to fit the facts to the theories, rather than in altering their ideas in conformity with the facts which they observed. This curious weakness of the human understanding applies to small matters as well as to large, to the microscopic as to the macroscopic. The presence of a certain special tissue with a definite function, such as muscle cells with their contractile powers, should imply of necessity that the tissue is there to exercise its function, and that the organ which contains it is so far contractile. The existence of muscle, for example, in the cerebral arteries ought to have been enough in itself to show that these vessels had vaso-motor properties, as arteries elsewhere, yet this was strenuously denied on purely negative grounds, though voices called in the wilderness never so loudly. Similar things might be said about the vessels of the lung.

There is another situation in which muscle has been known for many years, but no definite function has been assigned to it, nor reasonable explanation given of its presence. We refer to the submucous musculature, the *muscularis mucosæ*, such as is found in the stomach and intestines, and about which Prof. Gösta Forssell, of Stockholm, recently read a very interesting and important paper in the Section of Electro-Therapeutics of the Royal Society of Medicine, which was reported and illustrated in THE LANCET for March 31st. Anatomically, the *muscularis mucosæ* is a well-developed and continuous layer. In the stomach it even shows here and there a tendency to form outer and inner strata running in cross directions. It has a definite and full nerve-supply from the submucous plexus, which is itself a distinct and separate derivative of the myenteric plexus. These facts alone may be said to point strongly to some definite and important rôle which, up to the present, has not been demonstrated. The general idea of medical men concerning the matter is probably what Sir Humphry Rolleston happily expressed when he said, in the discussion, that he had previously regarded the gastro-intestinal mucosa as capable of about the same range of movement as the skin possesses in the act of "gooseflesh." Prof. Forssell has much wider conceptions than this, views of definite action and function that will, without doubt, lead to considerable physiological criticism. He holds that the mucous membrane is not mechanically passive, but its folds represent phases of active movement, and it is actively concerned in controlling the rate of flow along the alimentary canal and in the formation of "digestive chambers" of varying form and size, in which the material can be more intimately surrounded by the membrane. This throws on the mucous membrane a much greater responsibility for the success of the digestive processes than has been accorded to it hitherto, and is a view that calls for serious investigation and consideration. The ultimate proof must rest on experiment and direct observation; anatomical preparations are in this respect of little value, but the deductions from experiment and observation must be in accordance with anatomical fact if they are to stand. The relation of muscle cells to the central lacteal of a villus is quite in keeping with an assumed action on this channel, and there seems to be no reason why the whole strand might not also alter the shape and length of the projection; but it might be objected, for instance, if one were considering the valvulæ conniventes or folds of Kerckring, that the method of continuity of their muscular layers with the general basal stratum could only allow of a limited amount of alteration in position. However this may be, the skiagrams shown by Prof. Forssell, especially those of the jejunal loop, are very suggestive arguments for the views he adopts, and it seems to us that he has opened a new phase in the physiological study of all the factors which combine to constitute the processes of digestion.

RECENT WORK ON THE SCHICK TEST.

OBSERVERS on both sides of the Atlantic continue to make fruitful studies of diphtheria in the new light thrown by the Schick test for immunity and the method of producing immunity by toxin-antitoxin mixtures. In a recent report[1] by Surgeon-Commander Sheldon F. Dudley, R.N., he records observations on the distribution of immunity in a school of over 1000 boys and on the changes from susceptibility to immunity which occurred during outbreaks of diphtheria. He also correlates the results of the test with the incidence of cases of diphtheria and of carriers. An epidemic of scarlet fever was in progress at the same time, and he draws some conclusions as to the mode of spread applicable to both diseases. The report indicates the way in which at the present time new light is falling on the more obscure problems in the epidemiology of diphtheria. During the epidemic the finds of "morphological diphtheria bacilli" were divided among 63 cases of membranous diphtheria, 14 of non-membranous sore-throat, and 28 carriers. The Schick test carried out four months after the beginning of the epidemic revealed the fact that among the new boys entering the school at 11 to 13 years of age immunity was present in 55 per cent., and that of 764 boys, who had been at least one term in the school and been exposed to the chances of infection during the height of the epidemic, 86 per cent. gave a negative result to the test—i.e., were immune. Those boys who had been two and a half to four and a half years in the school were immune to the extent of 95 per cent. The observations made confirm the statements of other workers in finding that the Schick test is invariably positive in actual cases of diphtheria, but that in carriers the results are negative. In fact, carriers are generally considered to owe their escape from active disease to this immunity. The production of active immunity to diphtheria is a slow process. Immunising doses of toxin-antitoxin mixtures in a large percentage of those inoculated did not produce immunity (Schick-negative reaction) for eight weeks to three months. In the present series of cases of clinical diphtheria it was shown that the Schick-positive reaction during the attack had been converted into a Schick-negative in

[1] The Schick Test, Diphtheria and Scarlet Fever: A Study in Epidemiology. Medical Research Council, Special Report Series, No. 75.

only 84 per cent. four months after the attack, though later this was found to have risen to 92 per cent.

The interesting question arises, by what exact means a susceptible new boy becomes immunised. At first sight it would seem probable that this change was effected by the boy receiving a slight superficial infection and becoming a temporary carrier, since it is known that many such carriers are often present in epidemics. The difficulty lies in the fact that Schick-positive carriers of virulent bacilli are unknown. Commander Dudley thinks that immunity is developed as the result of the frequent reception and rapid destruction of diphtheria bacilli in numbers insufficient to cause actual clinical disease or to be detected bacteriologically, as in the case of a carrier. He believes that in fact during an outbreak three "epidemics" are in progress simultaneously: (1) of clinical diphtheria, (2) of bacteriological carriers, and (3) an immunising epidemic of subpathogenic natural "inoculations" which are only recognisable by their results. This hypothetical immunising process he expands as a theory of the spread of infection in other diseases also—e.g., scarlet fever. He considers the relation of the reception of the pathogenic agent to that of its destruction is the determining factor in infection. If the reception goes on faster than the destruction, the virus accumulates till present in a sufficient dose to infect. This hypothesis agrees with the much greater danger of infection from proximity of susceptible individuals to the infective cases or the carriers during the night, since the eight or more hours of exposure allow a considerable accumulation of infective material, if the virus received is being destroyed at a relatively low rate. In this connexion the "spacing out" of beds, so successfully practised by J. A. Glover in the case of meningococcus carriers during the war, is dwelt on in some detail as applied to diphtheria, scarlet fever, &c. In the school concerned the distance between the beds was only 1 ft. 9 in., and it is claimed that certain non-pathogenic bacteria—e.g., Hoffmann's bacillus as well as the scarlet fever virus—were spread mainly during the night. This thesis is supported by reference to plans of the bedrooms. A plan showing the distribution of the beds in which cases of diphtheria occurred affords no evidence of spread in the dormitory, but other considerations and the probability of intermediate carriers lead the author to look upon the bedroom as the place where transmission usually occurred. On the other hand, strong evidence is brought forward that the *first* cases actually contracted their infection in the class-rooms by means of penholders sucked by dangerous carriers and then, during the next lessons, used by the members of another class in the same room. Virulent *B. diphtheriæ* were experimentally deposited on a penholder in this way and later, after lying for a fortnight in a cupboard, were cultured and shown to be both viable and virulent. Complete records of epidemics in which carriers are systematically sought for and the Schick test is made and repeated later, together with other epidemiological factors, will no doubt serve to clear up the points which are still at issue. Commander Dudley's report concludes with valuable observations and conclusions on the nature of the Schick "pseudo-reaction."

Characteristic energy has been shown by some public health departments in America and large numbers of children have been tested and the Schick-positive (susceptible) immunised with toxin-antitoxin mixtures (T.A.T.). Moreover, the subsequent histories of the children have been followed up as regards immunity and attacks of diphtheria. In March, 1922, Park reported that among 90,000 children in New York who were known to be Schick-negative (immune), either naturally (57,000) or as the result of immunisation (33,000), 18 cases of diphtheria had occurred, as against 56 cases among 90,000 untreated control children; a rate of morbidity reduced to one-quarter. Dr. John Ceconi now records [2] the results of about 26,000 Schick tests made in Boston during six months in 1922. Of a series of 20,713 children tested 19,148 came up for examination and the results were "read"; 9983 were found to be Schick-positive (susceptible), and of these 7013 (70 per cent.) received three T.A.T. doses. The results of applying the test again ("re-Schicking") six months later were known in the case of 300 at the date of publication and showed a change from positive to negative in over 95 per cent. What change in immunity would have occurred naturally without inoculation can only be inferred from the general results of the Schick test, but there is no reason to suppose that it would have been considerable. The prevalence of diphtheria bacilli at the period covered appears to have been very low. Examination of swabs from 1663 Schick-positive children yielded 6·2 per cent. of cultures of *B. diphtheriæ*, all of which were non-virulent, and 1000 Schick-negative children yielded 5·7 per cent., also all non-virulent. The stimulus to the production of natural immunity by contact does not therefore seem to have been present to any great extent. It is pointed out that the effect of immunisation is not an increase in the number of carriers as some have feared would be the case. In a statistical report on the same date by Dr. Paul Eaton it is stated that the percentage of susceptibles may vary from 15·2 to 72 per cent. in crowded and thinly populated districts respectively. The cause of "pseudo" or "protein" reactions following the Schick test inoculation is not attributed mainly to a sensitiveness to the protein of the bacillus itself, but experiments on this point are stated to be in progress. The work in Boston is being carried out with a staff of eight physicians and seven nurses, and is presumably being continued with equal vigour. The effect of these attempts to prevent diphtheria by immunising the susceptible should be still more apparent in a few years.

[2] Report of Progress on the Schick Toxin-antitoxin Activities of Boston Health Dept. By John A. Ceconi, M.D. And a Statistical Report on the same by Paul Eaton, M.D. Boston Med. and Surg. Jour., clxxxviii., No. 4, pp. 94–99, Jan. 25th, 1923.

THE ACTION OF QUINIDINE ON ACUTE GOITRE.

QUINIDINE, which has recently sprung into prominence on account of its dramatic effects in certain forms of heart disease, seems to have other spheres of usefulness, as a recent paper by Dr. E. Benhamou [1] shows. The case he records is certainly striking. A woman, aged 45, whose mother was rheumatic and father tuberculous, had suffered at the age of 17 from rheumatism of the left knee, lasting for six months. Off and on she had suffered from rheumatic pains, and she had been a little short of breath, although there were no auscultatory signs of disease. The sudden onset of the menopause, a few months before she came under treatment with quinidine, was promptly followed by her first attack of essential, paroxysmal tachycardia, which lasted half an hour. The second attack, which occurred a month later, was a little longer and more distressing. Gradually the intervals between each attack became shorter until they were continuous, and the dyspnœa and cardiac distress were such that she was completely invalided. A goitre, which had lasted for some time, but which had hitherto been small, now began to grow rapidly, pulsating and threatening to suffocate her. On examination she was found to be suffering from severe incessant tachyarrhythmia with asystole; the pulse was very rapid and irregular, the cardiac and liver dullness was increased, the bases of both lungs were congested, the lower limbs were swollen, and there was oliguria with paroxysmal dyspnœa. The pulsation of both goitre and heart was most embarrassing, and the general condition was alarming. The exhibition of digitalis had a beneficial effect on the asystole, diuresis, and respiration, but the tachyarrhythmia with its concomitant discomfort persisted unmodified even after digitalis had been given for eight days. Quinidine sulphate was now given, the total quantity on the first day being 0·6 g. Improvement instantly followed, and by the second day the pulse had fallen to 80 and was more regular. The same dosage was continued, and when it was reduced

[1] Paris Médical, March 10th, 1923.

to 0·4 g., the pulse-rate began again to rise. After eight days the supply of quinidine ran out, and for the next three days, during which no quinidine was given, there were two attacks of tachycardia. The resumption of the quinidine medication promptly restored the former rhythm. After 25 days it was necessary to give quinidine only every second or third day. The patient was able to return to her usual occupations, and what was still more remarkable than her cardiovascular recovery was the almost complete disappearance of the goitre; it was even smaller than it had been before the menopause. This case is also instructive as showing the differences in the spheres of usefulness of digitalis and quinidine respectively.

PRIMARY CANCER OF THE PLEURA IN HUSBAND AND WIFE.

SYNCHRONOUSLY with the publication of *Acta Medica Scandinavica* for Feb. 22nd, 1923, there has been issued a supplement containing the transactions of the Tenth Northern Congress for Internal Medicine, held in Helsingfors in the summer of 1921. Among the interesting papers in this bulky supplement, there is one by Dr. Arnold Josefson with the above heading. In March, 1911, he was consulted by a man, aged 55, of German extraction, who had suffered for some weeks from dyspnœa. There was a history of gout, but not of syphilis. A pleural effusion on the right side was aspirated thrice in 1911, the fluid being blood-stained. The X rays showed a dense shadow over the lower two-thirds of the right lung. There was no history of cancer in the family. In March, 1912, metastatic tumours were found in the right twelfth rib and in the neighbourhood of the gall-bladder. Some time afterwards metastases were also found in two other ribs, one on the right side and one on the left. Herpes zoster developed on the right side of the chest in May, and death occurred in July, 1912, after an illness of 16 months. In March, 1921, his wife, a Swede, aged 62, complained of shortness of breath. A pleural effusion on the right side was found, and almost two litres of blood-stained fluid were aspirated. Within two months she was dead. The necropsy showed primary cancer of the right pleura with metastases in the great omentum, the peritoneum, and the retroperitoneal lymphatic glands. Dr. Josefson raises the following questions: Did one patient infect the other? Was the cancer caused by one and the same virus? Was the matter merely a coincidence? Could the wife have harboured the virus all these years without being aware of it? Whatever the answers may be, such a case of cancer *à deux* is very remarkable. Whether it is unique, as Dr. Josefson claims, is doubtful, but at any rate the coincidence is sufficiently rare to justify the suspicion that it was purely accidental. Had these cases been an example of contagion, one would have expected the skin rather than the pleura to have been the seat of the primary disease. Dr. Josefson finds it impossible to dismiss the view that there may have been a common, external cause, and he concludes: "Granted that we are going in the wrong direction, would it not be advisable, with the knowledge which I have here emphasised, to proceed on the same radical lines with regard to cancer as to tuberculosis?" Though he knows of no case of the attendants of a patient becoming infected by the latter's cancer, he holds that patients suffering from cancer should be isolated, and that the bedding and dwellings of patients suffering from cancer should be disinfected when they are no longer used by the patient. With regard to his advocacy of isolation, he will assuredly find many dissentients in the foremost ranks of the medical profession.

THE Sixth Silvanus Thompson Memorial Lecture will be delivered by Dr. C. Thurstan Holland at a general meeting of the Rontgen Society to be held on Tuesday, May 1st.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XIV.

THE TREATMENT OF CLUB-FOOT IN THE NEWLY BORN.

THE only type of club-foot which is likely to offer difficulties to the practitioner is talipes equino-varus. The other congenital varieties are easily dealt with. Congenital calcaneus is not accompanied at first with any appreciable weakness of the calf muscles, and its treatment necessitates mere fixation of the foot in the position of equino-varus for about six weeks. If the deformity is not easily overcome by immediate manipulation it can be effected in two or three stages and the recovery is assured as soon as the child can voluntarily plantar flex the ankle. A pure talipes varus is rare and is slightly more obstinate, but the treatment consists in fixing the ankle in eversion. Here again recovery is complete only when the peronei act voluntarily.

Talipes Equino-varus.

Our problem is in connexion with talipes equino-varus, and our difficulties are mainly influenced by its duration and severity, or both. The primary distortion of equino-varus is a dislocation inwards of the anterior part of the foot at the medio-tarsal joint and an inward deviation of the os calcis, with shortening of the calf muscles. The deformity increases from week to week in the untreated case. The scaphoid articulates with the side of the head of the astragalus instead of with its anterior surface; it also lies more towards the under side of the astragalus and thus leaves the head of the astragalus more or less uncovered. The cuneiforms and metatarsals follow the direction of the scaphoid. The cuboid lies somewhat to the inner side of the anterior part of the os calcis. In a certain proportion of cases there is an internal rotation of the tibia and fibula. In the early cases the main obstructions to the reduction of deformity are the plantar fascia and the structures which bind together the os calcis, astragalus, and internal malleolus.

The question is often asked, "When should treatment be commenced?" and the answer varies from "Immediately" to "When the child commences to walk." On this point I desire to be very definite. In my opinion *treatment should commence at once*. Delay adds enormously to our difficulties. When we remember that at the very earliest appearance of the baby a certain displacement of the bones exists, we can understand that every week of growth fixes and increases these bony changes. A great responsibility attaches to the medical man who counsels delay. The blame cannot be thrown upon the midwife, for she invariably calls attention to the defect. To any surgeon of practical experience it is hardly necessary to state that a baby of one day old is an infinitely easier problem than that of a month old, and that after a few months the deformity may require very skilled and somewhat forcible effort. I have never met with a case where treatment has been started in the first week where the deformity could not be completely rectified by manipulation and retention in two months. This, of course, does not mean that the child is cured, for reasons which I will mention later, but the foot in this short space of time can be made mobile so that it can, without effort, be placed in a position of calcaneo-valgus.

Are we able, when we see the case early, to form a reliable opinion as to whether treatment is likely to be easy or difficult? I think we are. Cases which present a heel which is short and inverted and which in addition are accompanied by marked adduction at the mid-tarsal joint are more difficult than those with

a comparatively straight inner border of the foot and a heel less deflected.

Manipulation.

The most appropriate treatment for a very early case of club-foot is that of manipulation and fixation. Division of the tendo Achillis can be avoided. The foot should be manipulated with the primary object of straightening its inner border; in other words, the anterior part of the foot should be abducted at the mid-tarsal joint. This can usually be effected in a few minutes. If it is the left foot the heel and the epiphyses at the ankle-joint should be grasped by the left hand, while manipulation is carried on by the right. When the adduction is overcome the varus deformity should be slowly rectified. This should be done as completely as possible, even to the point of over-correction. When the surgeon is satisfied that there is no resistance to outward displacement he can proceed to overcome the equinus. This he does by gripping the right ankle in the palm of his left hand, which should contain the back of the heel and the lower epiphyses of the tibia and fibula. With the foot in the valgoid position the tendo Achillis is stretched, with the right hand grasping the foot and pushing it upwards. During all these manipulations the endeavour should be to guard the epiphyses, which are easily injured in a baby, but which can always be safely protected. In cases where, in addition to equino-varus, there is a rotation of the tibia and fibula, there should be manipulation of these bones by a method which can best be described as similar to that employed in wringing a cloth—i.e., the left hand grasps the upper half of the leg, twisting it inwards, and the right hand the lower, twisting it outwards. If the tendo Achillis is very tight and the surgeon fears an injury to the epiphyses it may be divided, but in the case of a baby this is rarely required.

Division of the Tendo Achillis.

The division of the tendon is often done in very bungling fashion. The dangerous long tenotomes should be discarded for short ones, which I have often illustrated. The child should be made to lie on his face while the nurse flexes the sound limb out of the way. The position of the tendon can be felt with the handle of the knife and an indentation made with it to its side to denote its position. This is especially helpful in the case of a fat baby. The surgeon holds the foot with the left hand in a dorsi-flexed position and enters the knife to the inner side of the tendon at the indentation mark made in the skin. The foot is then slackened while the blade is turned beneath the tendon, then tightened, so that by a short sawing movement the tendon is divided from before backwards. When the tendon has been divided the equinus should be at once corrected. There is no object to be gained by the *gradual* separation of the divided ends. The fear of non-union is practically groundless. It has only happened to me once.

Fixation.

When the foot is restored to its normal position it can be retained by bandage, adhesive strap, plaster, or appliance. In the case of a baby I prefer adhesive plaster, which is so applied as to keep the foot everted and dorsiflexed. In older children other methods are used. In using adhesive plaster care must be taken not to constrict the muscles.

The adhesive plaster should be used as follows. Apply a long strip of ½-inch adhesive strapping round the tread of the foot from the outer border over the dorsum and across the sole. The foot is then everted, flexed above right angles, and retained in this position by continuing the plaster to a point above the calf muscles, where it is then taken round the back of the limb just below the knee. If further eversion is required an additional short length of strapping may be applied round the ankle and including the everting piece already in situ. The strapping must be renewed as frequently as it becomes ineffective.

Surgeons will have noted that after successive manipulations knock-knee often occurs as a complication. This is due to the surgeon, who has allowed the internal lateral ligament of the knee to be stretched. To prevent this the knee-joint should be protected by an assistant while the feet are stretched.

We have seen that treatment should be started at once and should be continued until the patient can voluntarily place his foot into eversion and dorsi-flexion. The cure is only finally completed when the patient can walk.

The Avoidance of So-called Relapses.

There are three causes of so-called "relapse" in club-foot: (1) Insufficient correction of deformity; (2) erroneous deflection of body-weight on the foot in walking; (3) a slack and lengthened condition of the dorsiflexors and evertors of the foot due to their overstretched and semi-paralysed condition. If the deformity be not sufficiently corrected in the first instance the old condition of things is sure to return, because of the altered shape of bones and other structures, more especially the ligaments. Roughly speaking, the change in bones and ligaments on the convex aspect of the talipes has resulted in an increased surface measurement. Unless this is quite obliterated by treatment the unequal growth goes on until the so-called "recurrence" again taxes our resources.

When the time for walking comes the deformity will either be made worse or perfected by this exercise. If it be made worse it is due to the fact that the superincumbent body-weight is placed too much on the outer side of the tarsus, and that therefore every step the patient takes tends to emphasise the varus. One can see how deleteriously walking would affect such a case. Walking should give the finishing touches to the surgeon's art and should not be allowed until the body-weight at every step tends to flatten the plantar arch.

The effect of lengthened muscles opposed to deformity is very obvious, and when one realises the fact that in every case of club-foot the peronei and dorsi-flexors of the ankle have for months remained in a stretched condition, while the tibials and calf muscles are short and unstretched, it is easy to understand the imperfect recovery where no attention is paid to the strengthening of the weak group of muscles. The dorsi-flexors of the ankle and the peronei, which have for so long remained over-stretched, behave to all intents as paralysed muscles would, and gravity decides the issue exactly as it does in the case of an equino-varus due to poliomyelitis. When the patient has arrived at the stage for walking and the deformity is corrected and, most important of all, when he can voluntarily evert and flex his foot, he should be taught to walk. Correct deflection of body-weight on the tarsus must, however, be assured.

If treatment is correctly carried out there is no apparatus required during after-care. The child should walk with an ordinary shoe with a flat heel. The so-called "orthopædic" shoes are a relic of the past. Massage of the peronei and the dorsiflexors should be continued and every device employed to secure voluntary action of these muscles.

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Special Articles.

"INSULIN" AND DIABETES:

THE PRESENT POSITION.

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Dr. F. G. Banting, in November, 1920, conceived the ideas that: (*a*) since the acinous but not the islet tissue of the pancreas degenerates after ligation of the duct of the organ, advantage might be taken of this fact to prepare an active extract of islet tissue; and (*b*) trypsinogen or its derivatives destroy or are antagonistic to the internal secretion of the gland.

Experimental Basis.

Prof. J. J. R. Macleod, of the University of Toronto, gave facilities for and direction to the working of these hypotheses by Banting and Best.[1] The experimenters made extracts with Ringer's solution of dogs' pancreas after the acini had degenerated owing to previous ligation of the ducts or after they had been exhausted owing to repeated secretin injections and vagal stimulation below the diaphragm. The intravenous injection of these extracts into dogs rendered diabetic by pancreatectomy resulted in a marked fall in the percentage of sugar in the blood and abolition of glycosuria. The extracts obtained after previous ligation of the pancreatic ducts were the most potent for reduction of blood-sugar and the least toxic. In one dog the normal blood-sugar of 0·090 per cent. became 0·26 per cent. after pancreatectomy, and 3·10 g. of sugar were excreted in the urine during 24 hours; 5 c.cm. of potent pancreatic extract given intravenously resulted in the blood-sugar dropping from 0·26 per cent. to 0·16 per cent. in one hour; from the third hour after the injection the blood-sugar gradually rose again to 0·25 per cent. at the seventh hour when the injection of another 5 c.cm. of extract brought the sugar down to 0·18 per cent. Later injections brought the blood-sugar from 0·43 per cent. to normal, whilst extract of spleen or boiled extract of pancreas were impotent in this respect. Potent extract given per rectum or intravenous injection of extract on which active pancreatic juice was allowed to act were impotent. Extracts of glands in which the acini were not completely degenerated were more or less toxic on injection. The investigators make the following statement:—

"In the course of our experiments we have administered over 75 doses of extract from degenerated pancreatic tissue to ten different diabetic animals. Since the extract has always produced a reduction of the percentage of sugar of the blood and of the sugar excreted in the urine, we feel justified in stating that this extract contains the internal secretion of the pancreas."

The general conclusions from the foregoing experimental work are as follow:—

Intravenous injections of extract from dog's pancreas, removed from seven to ten weeks after ligation of the ducts, invariably exercise a reducing influence upon the percentage of sugar of the blood and the amount of sugar excreted in the urine.

Rectal injections are not effective.

The extent and duration of the reduction varies directly with the amount of extract injected.

Pancreatic juice destroys the active principle of the extract.

That the reducing action is not a dilution phenomenon is indicated by the following facts: (*a*) hæmoglobin estimations before and after administration of extract are identical; (*b*) injections of large quantities of saline do not affect the blood-sugar; (*c*) similar quantities of extracts of other tissues do not cause a reduction of blood-sugar.

Extract prepared in neutral saline and kept in cold storage retains its potency for at least seven days.

Boiled extract has no effect on the reduction of blood-sugar.

In November, 1921, Banting and Best[2] discovered that the fœtal calf pancreas of under five months' development did not contain (external) pancreatic juice, but did contain the internal secretion capable of reducing blood-sugar. They give an example of potency as follows: 50 g. of fœtal pancreas were macerated in 250 c.cm. saline and filtered; 15 c.cm. of the filtrate were diluted to 250 c.cm.; a 15 c.cm. dose of this solution reduced the blood-sugar of a 10 kg. diabetic dog from 0·4 per cent. to 0·15 per cent. in three hours. It was found at this time that subcutaneous injection resulted in a slower and more prolonged but no less marked hypoglycæmogenetic effect. It was also found that 0·7 per cent. tricresol added to the extract did not interfere with its action, but that by filtering through a Berkefeld candle much potency was lost. Alcohol was next tried as an abstractive in the endeavour to procure a sterile extract, and *the active principle of the internal secretion* was found to be *alcohol soluble* while the digestive ferments were not. For example, after macerating *whole* beef pancreas in 95 per cent. alcohol for 12 hours and filtering, the resinous-like residue obtained, after evaporating to dryness, when re-dissolved in saline and injected intravenously in suitable dosage, reduced blood-sugar in a dog from 0·35 to 0·08 per cent. in three hours, and rendered the urine sugar-free. The aid of Prof. Collip, of Edmondton University, was then invoked in order to prepare a protein-free extract and so avoid the depressor and reaction effects of the crude extract; this was accomplished successfully so that the extract could be studied clinically.

By the use of these extracts three *totally* pancreatectomised dogs lived 19, 21, and 70 days respectively. The injection of extract of other organs,[3] such as spleen, liver, thymus, muscle, had little or no effect on blood-sugar, and that of thyroid had very little. Finally, an increase of the respiratory quotient almost to unity was observed in totally depancreatised dogs, showing the ability of the organism to utilise sugar after injection of the extract.

The next step was the trial of the extract, as now perfected, in the treatment of human diabetes.[4] The investigators write:—

"The effects observed in depancreatised animals have been paralleled in man. The fall in blood-sugar occurs, and in two cases, repeatedly examined, a rise in the respiratory quotient indicating carbohydrate utilisation occurs more or less coincidently with the attainment of a normal blood-sugar level. Patients report a complete relief from the subjective symptoms of the disease. The sugar excretion shows marked decrease, or if dosage be adequate, disappears. Ketonuria is abolished, thus confirming a similar observation by Collip in diabetic animals. These results taken together have been such as to leave no doubt that in these extracts we have a therapeutic measure of unquestionable value in the treatment of certain phases of the disease in man. In agreement with observations of other investigators on laboratory animals, it has been found that without careful control severe toxic reactions may be encountered, and this will undoubtedly be a factor in the evaluation of the ultimate therapeutic utility of the method."

They give in this paper several clinical examples, including one boy in whom acidosis was also controlled in addition to glycosuria by treatment with the extract.

Preparation and Standardisation of Extract.

The method of preparation of the first extracts used clinically, devised for removing protein, salts, and lipoids and proteolytic ferments, was described by Collip[5]: fresh pancreas was macerated in an equal volume of 95 per cent. ethyl alcohol for several hours and filtered, two volumes of 95 per cent. alcohol were added to the filtrate, and the mixture was allowed to stand several hours to precipitate the major part of the proteins, filtered, and the filtrate which contained the active principle was evaporated at 10° to 30° C. in vacuo to a small volume. An aqueous extract was then made which was washed in a separatory funnel with ether to remove lipoids and distilled in vacuo to a thick consistence. 80 per cent. alcohol was added, and the whole centrifuged—the top clear layer of alcohol contains the entire active principles

in solution, below this were a flocculent layer of protein, a watery layer of saturated salt solution, and a lowermost layer of salt crystals. The top layer was removed, delivered into several volumes of 95 per cent., or better, of absolute alcohol, and the whole allowed to stand several hours until the active principle precipitated out. The latter was caught on a Buchner funnel, dissolved in distilled water, concentrated by vacuum distillation, filtered through porcelain, tested for sterility and delivered to the clinic. The final product was given hypodermically without any local reaction. Present methods of production are somewhat modified; with improved methods 5 kg. of beef pancreas yield about 200 to 400 units of insulin.

It now became necessary to devise some method of standardisation of the extract in order to regulate dosage. The name "insulin" was given to the extract by its discoverers. The unit of insulin was taken as the amount (in cubic centimeters) of the extract which on subcutaneous injection into normal fasting rabbits of 2 kg. weight caused a lowering of the blood-sugar to 0·045 per cent. (about 50 per cent.) in from one to three hours.[6] In other communications it was shown that the injection of insulin in diabetic men and dogs raises the respiratory quotient when carbohydrate is fed, showing carbohydrate utilisation, and in diabetic dogs causes fat to be reduced in the liver at the same time that *glycogen accumulates* therein. It also abolishes the acetonuria in diabetic dogs. Insulin added to the perfusing Locke's solution of excised surviving rabbit heart increases the glucose consumption more than thrice.[7] If the blood-sugar of normal rabbits falls too low after injection of insulin, characteristic symptoms appear,[8] such as hyper-excitability, fear, hunger, thirst, and finally clonic convulsions; as a rule, the convulsions appear when the blood-sugar falls to 0·045 per cent. These symptoms are completely abolished in a few minutes by subcutaneous or intravenous glucose injections, and are due to hypoglycæmia.

Macleod, discussing some of the experimental work,[9] says that the function that is primarily regulated and controlled by the internal secretion of the pancreas is that concerned with the *deposition of glycogen*. The results obtained "seem to suggest that glycogen must be an essential preliminary stage in the utilisation of sugar by the animal body, and that when the pancreatic hormone is absent excess of sugar leads to the mobilisation of large quantities of fat." In discussing the matter he says:—

"In the light of these various types of evidence we feel justified in expressing the belief that it will be possible by administration of pancreatic extract to treat diabetes in man much more satisfactorily than has hitherto been the case. Dietetic control must no doubt remain an important feature of treatment, and will probably be all that is necessary in the earlier stages of the disease, but in the later stages it is hoped that administration of extract will prove of value. What other therapeutic uses the pancreatic extract may have remain as yet undetermined."

Clinical Study in Man.

Insulin has been distributed in Canada, U.S.A., and Great Britain to selected physicians and research workers for accurate investigation and study in the treatment of human diabetes. For example, over 50 cases were tested and observed in Toronto by Banting, Campbell, and Fletcher,[10] and some of them were under treatment continuously for several months; many of them were severe cases.

"On the first or second day of treatment, if sufficient insulin is given, the urine becomes sugar-free, and on the second or third day ketone-free. These patients become conscious of increasing strength before the end of the first week. From a state which may be one of discouragement or of profound mental depression they become cheerful and interested. Hunger is replaced by appetite; the thirst is lessened; œdema, which is common in these cases, disappears. Patients find they are less irritable, and state that they begin to sleep well. The expression improves; the skin becomes less harsh and dry; even the hair becomes softer; in fact, the patient loses that appearance which characterises the diabetic. In ten days a very considerable amount of physical vigour is restored. Some patients have been able to return to work after a month of treatment. The patient's weight frequently increases, and this can be readily brought about by supplying food in excess of the calorie requirement and increased amounts of insulin."

No case of diabetes was encountered which was not rendered aglycosuric *in spite of a large increase in the total calories*. Similarly, and perhaps more remarkable, the disordered fat-metabolism is restored to normal, inasmuch as insulin treatment results in rapid abolition of acidosis as evidenced by restoration of the normal alkali reserve of the blood, as well as by disappearance of ketone bodies from the urine and the signs and symptoms of this condition. Of ten cases of diabetic coma, six recovered—of the four fatal cases, two were inadequately treated with insulin; one died of pneumonia; one of vaso-motor failure and one of sloughing gangrene of the foot, and both these with sugar- and ketone-free urines and normal blood-sugars. Toxic reactions are rare, and dosage must be controlled by blood-sugar estimations, for, as in animals, also in man, when the blood-sugar percentage falls considerably (to 0·07 per cent.) under the influence of insulin, symptoms appear, such as nervousness, hunger, sense of weakness or fatigue or emotional instability; vaso-motor phenomena such as pallor or flushing and sweating are common. If the blood-sugar falls still lower there is acute distress or even mental disturbances, and, finally, coma, hypotonia, and loss of the deep reflexes. These symptoms can be relieved by carbohydrate administration, such as 50 to 100 c.cm. of orange-juice, or 5 to 25 g. of glucose with orange-juice by mouth or glucose injected intravenously or subcutaneously. One c.cm. of 1 in 1000 adrenalin intramuscularly is useful.

Clinical study of the hypodermic use of insulin in the treatment of diabetes mellitus in man therefore shows that: (*a*) Glycosuria is abolished; (*b*) blood-sugar is reduced and maintained at normal levels; (*c*) ketones disappear from blood and urine and acidosis is abolished; (*d*) the respiratory quotient shows increase in carbohydrate utilisation; (*e*) the chief symptoms of diabetes mellitus are relieved and the patients show marked clinical improvement; (*f*) insulin is practically a specific remedy for diabetic coma. The above results have been confirmed by some private communications to the present writer from reliable workers.

According to Collip[5] the probable causation of the convulsive state in normal rabbits rendered hypoglycæmic by overdose of insulin is as follows: the glycogen-forming activity of the injected insulin lowers the sugar tension in the blood to such a degree as to jeopardise the oxidation of glucose in the tissues even though a certain amount of sugar still exists in the blood. This theory is supported by the fact that blood and urine of rabbit obtained immediately following the convulsive state shows qualitative and quantitative evidences of acidosis. It is well known that the oxidation of insufficient carbohydrate in the body will give rise to the formation of the so-called ketone bodies.

"These findings are of the greatest interest in that it would appear that while we have in insulin a substance which will correct all the acidotic signs, both in experimental animals rendered diabetic and in patients suffering from diabetes (if the dosage is adequate), it will, nevertheless, produce many of the cardinal symptoms of acidosis when administered to the normal animal in amount sufficient to produce a hypoglycæmia of a marked degree."

Some Properties of Insulin.

Insulin is apparently not a protein; it may be heated on a boiling water-bath for ten minutes in a faintly acid solution (pH 5 to 6) without appreciable reduction in strength, but actual boiling destroys it in three minutes; it is absorbed by kaolin and charcoal; its potency is greatly reduced by Berkefeld filtration.[11] Insulin is a white powder, soluble in water (except at pH about 5 or 6), giving a lævo-rotatory solution, and in alcohol (except at its iso-electric point).[12] Perfusion of the pancreas extracts the anti-diabetic substance in sufficient concentration to affect favourably on injection of the

perfusate all the major symptoms of diabetes produced in animals by depancreatisation.[13]

General Considerations.

The product must be given by subcutaneous or intravenous injection, as it is destroyed by trypsin; the dosage varies with the case according to the severity of the disease, the body weight, the diet, and so on. The dosage must be controlled by frequent blood-sugar estimations in each case, until one learns the amount in a given case on a given diet necessary to keep the fasting blood-sugar normal and to abolish glycosuria permanently. The usual plan of dosage is to divide the daily quantity into three equal parts, each part to be given just before the three chief meals. Anything from 6 to 50 rabbit units a day may be required, and some coma cases may require 150 units within 12 hours. Adjustments in doses are often necessary, because a dosage which just controls glycosuria one day may be excessive or inadequate on another.

Insulin is at present on the market in U.S. America, where its price is about 3*d*. per rabbit unit; the supply is very limited; it is expected that it will be offered by British producers of biological products in the near future; the cost and the frequent subcutaneous injections necessary over a long period of time are certainly disadvantages in the use of insulin. The consensus of opinion is, very definitely, that the insulin treatment of diabetes mellitus will not replace the dietetic treatment but will be an important adjunct thereto—at least in the severer cases. Probably, as heretofore, the less severe cases will not need the product at all, and we will, especially in non-juvenile cases, be able to control the disease by dietetic means alone. Its use, however, in the severe, the juvenile, and coma cases, as well as those complicated by severe acidosis, infection, and gangrene, will assuredly be a very great addition to our present methods of treatment. It is questionable whether insulin should be used at all except by those who can regulate its use by blood-sugar estimations, or in threatened or actual coma or gangrene; even then the danger of hypoglycæmia should be understood, and suitable measures should be ready for dealing with the characteristic symptoms.

In order to prevent improper use and commercial exploitation of insulin, the investigators applied for patents for their product in Canada, U.S.A., and Great Britain, and tendered the patents when granted to the University of Toronto in Canada and the Medical Research Council in Great Britain. I believe both these bodies will licence approved manufacturers to produce insulin under the patents, subject to the producers satisfying these bodies that the insulin produced is of adequate purity and potency. The original investigators receive no monetary return from the sales. In the meantime several laboratories and commercial houses are investigating the problems of producing the substance in large quantity, and certain physicians conducting clinics in large hospitals are studying the use of the product under controlled conditions. Recently Macleod[14] has found that potent insulin preparations can be readily and comparatively inexpensively made from the principal islets of two readily available fish—namely, the angler (*Lophius piscatorius*) and the sculpin (*Myoxocephalus octodecimspinosus* and *scorpin*). In the majority of teleosteian fishes the islet tissue is more or less separate from the zymogenous. It is collected into one or several easily recognisable nodules, often encapsulated and associated with relatively little, if any, zymogenous cells. From these islets extremely potent insulin preparations were made, requiring the use of comparatively little alcohol. For example, in one experiment, from 0·68 g. of dried islet tissue of the sculpin more than 12 rabbit units of insulin were obtained; in another case, 0·19 g. of dried islet of lophius gave more than 1 rabbit unit of insulin. It seems, then, that here is a cheaper and more readily available source of insulin than bovine pancreas, but whether this source can be practically used for large scale production is doubtful. If now a method could be devised for giving the substance by mouth, the ideal in treatment would be attained.

It has for some time been known that pancreatic extracts have anti-diabetic properties on injection,[15 16] as evidenced by abolition of acidosis, glycosuria, or hyperglycæmia. These extracts have never come into active use owing to uncertainty of action, and toxicity due to the contained ferments and proteins on injection. The literature contains many similar claims for pancreatic extracts given by mouth; in all such cases, however, the effects were too uncertain to be of much use clinically; the beneficent effects occasionally observed may be genuine, and if so encourage one to hope that a way may be yet found for administering insulin orally. Efficiency claims must, however, be substantiated by blood-sugar estimations which, in the majority of instances, were not done in these cases. What the Toronto workers have done is to *isolate* the active internal secretion of the pancreas from proteins, salts, lipoids, and external pancreatic ferments, so that its physiological effects could be accurately and scientifically studied and used, for the first time with success, in the treatment of diabetes mellitus.

My personal experience with insulin in the treatment of diabetes mellitus is brief and confined only to two cases, owing to the difficulty of obtaining the substance. In one case, an elderly man with gangrene of the foot, 25 units of insulin subcutaneously reduced the fasting blood-sugar (revised Folin and Wu method) from 0·181 to 0·070 per cent. in 2 hours and 20 minutes, and abolished a moderate glycosuria. In another case, a young woman, subcutaneous injection of 16 units reduced the blood-sugar from 0·216 to 0·117 per cent. in 1¾ hours, and abolished a heavy glycosuria. The glycosuria and hyperglycæmia recurred in both cases on cessation of insulin administration, for no more of the product was obtainable at the time.

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CRIMINAL RESPONSIBILITY.

REPORT BY A COMMITTEE OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE Medico-Psychological Association of Great Britain and Ireland has submitted a report, drawn up by a special committee on criminal responsibility, to Lord Justice Atkin's Committee, who are considering whether any changes should be made in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised.

The medical profession, the report runs, are equally concerned with the legal profession and the public generally to ensure that the defence of insanity is not abused; they feel, however, that the law as at present interpreted is unsatisfactory, and does not always permit the best and fullest evidence of a prisoner's mental condition to be laid before the Court and Jury.

The M'Naughton Rules.

The Rules in M'Naughton's case have for many years been the subject of cogent criticism, both by medical men and by jurists.[1] That they have nevertheless retained their place in law to the present time has probably been due to (1) the failure to propound an acceptable alternative; (2) the fact that on numerous occasions individual judges have disregarded and declined to act on them; and (3) the knowledge, shared by judges and juries alike, that although a prisoner may be found guilty and sentenced, his case will be carefully reconsidered by experts appointed by the Secretary of State, in accordance with the Criminal Lunatics Act, 1884, and action will be taken accordingly, notwithstanding the finding of the Court.

As regards the Rules themselves, the report proceeds, we are aware that the Committee of this Association appointed to consider the matter in 1896 reported that they were unable at that time to make any suggestions for amending the law; but while fully conscious of the difficulty of the problem, we cannot agree that it is insoluble. We think that changes can be devised, which, without doing any violence to legal principles, would bring the law into closer accord with modern medical knowledge and requirements.

Criticism of Particular Rules.

We desire in the first place to offer some criticism of the particular Rules.

The Answers to Questions 2 and 3.—We take particular exception to the precise tests of responsibility laid down in the following words: "To establish a defence on the ground of insanity, it must be clearly proved that, at the time of the committing of the act, the party accused was labouring under such a defect of reason from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong." Insanity is admittedly incapable of precise definition. The definition of a lunatic in the Lunacy Act, 1890, as "an idiot or person of unsound mind," although open to criticism, connotes defect or derangement of mind, and so may be accepted as a rough and ready criterion. Whatever may be the exact words used to describe the mental state of a person accused of crime, the law is only concerned to know whether it is a condition that negatives the existence of *mens rea*.

The legal principle involved creates a difficulty which is inherent in the problem of the criminal responsibility of the insane, and would have to be faced even if the M'Naughton Rules were abrogated. For these Rules are not wrong in holding that irresponsibility is only an inference that may or may not be drawn from insanity; where they err is in attempting to define precisely the conditions under which the inference is legitimate. They identify responsibility with knowing and reasoning, whereas any medical man with experience of the insane must know of many persons as to whose insanity (and irresponsibility) there can be no possible doubt, who have realised the nature and quality of their act, have known that it was contrary to the law, human and divine, and have shown remarkable cleverness in carrying out their object.

The Answers to Questions 1 and 4.—These may be dealt with together, as they both presume a condition of insane delusion in respect of one or more subjects or persons, or as to existing facts in persons who, it is suggested, are not in other respects insane. We submit that these answers are based on distinctions which, in the light of the present knowledge of mental disease, are out of date. In our view all insane delusions are indicative and symptomatic of general unsoundness of mind. The evidence of their existence will be most material in assisting the jury to decide whether the prisoner is in fact insane, and whether in view of his insanity he ought or ought not to be held answerable in law for his act.

The Answer to Question 5.—This answer relates only to the admissibility of the evidence of a medical man conversant with the "disease of insanity," who never saw the prisoner previously to the trial, but who was present during the whole trial and the examination of all the witnesses. The value of the opinion of such an expert depends on its intrinsic worth.

Presentation of the Medical View.

We desire, however, to make it clear that in our opinion the real objection to the M'Naughton Rules involves something more radical than criticism of the terms in which they have been framed.

1. Even a slender acquaintance with the details of criminal cases in which medical evidence has seemed to fail to give the guidance to the Court that it was intended to provide, reveals the fact that some definite change in the medical view as to what constitutes insanity has occurred since 1843, when, it must be assumed, the judges framed the M'Naughton Rules in accordance with what they were advised was the generally accepted medical view as to the nature of insanity. Doubtless it was thought that medical men would find no serious practical difficulty in answering the supposed questions. Such an accommodation is now impossible, because it implies a conception of unsoundness of mind that is obsolete. Unsoundness of mind is no longer regarded as in essence a disorder of the intellectual or cognitive faculties. The modern view is that it is something much more profoundly related to the whole organism—a morbid change in the emotional and instinctive activities, with or without intellectual derangement. Long before a patient manifests delusions or other signs of obvious insanity he may suffer from purely subjective symptoms, which are now recognised to be no less valid and of no less importance in the clinical picture of what constitutes unsoundness of mind than the more palpable and manifest signs of the fully developed disorder, which may take the form of delusions, mania, melancholia, or dementia.

The practical bearing of this is twofold: first, it shows how it has come about that present-day medical witnesses find a real difficulty in satisfying the Court when pressed to give a categorical Yes or No to the M'Naughton questions as framed; and second, it shows the impracticability of attempting to frame any other formula. On this basis, therefore, it is thought to be a reasonable proposition to say, Let the facts as to insanity be put before the Court unhampered by any formula. Elucidation of all the relevant facts, including such conditions of defective control as occasion epilepsy, impulses, obsessions, hysterical states, drug addiction, and alcoholism in their bearing upon an alleged crime, would, in many cases, be necessary, and medical witnesses experienced in the care and treatment of the insane could give assistance to the Court in that direction. A jury, upon the facts so presented, with such guidance as the judge might feel it necessary to give, should have no insuperable difficulty in reaching a correct conclusion.

2. In our view the Law should be framed so as to allow the medical witness alleging insanity to make it clear that the facts observed by himself, supplemented by other evidence before the Court, form in his mind a coherent clinical picture of mental disorder; and he should be in a position to state that the prisoner's criminal act is symptomatic of, or at least consistent with, such a condition. His evidence should enable a jury to find that, even if there should be no apparent logical connexion between the prisoner's mental derangement and his criminal act, it is reasonable to conclude that both form part of his mental unsoundness, and it is important that that evidence should be placed before them as fully as possible. According to the present practice, experts on this question are subject to restrictions which are not imposed on experts on other matters. There does not appear to be any sufficient reason why a medical man should not be allowed to state his grounds for arriving at an opinion in his own way, subject always to the fullest cross-examination by the other side and by the Court.

3. We see no reason why a medical witness who has not examined the prisoner should not be asked "hypothetical" questions.

Abandonment of a Legal Criterion.

It may be objected to the foregoing observations that they imply the abandonment of a legal criterion of responsibility, and that such a criterion is indispensable. In this connexion it may be useful to refer to the practice at present prevailing in Scotland.

By Scots Law, as by the Law of England, insanity is a good defence only in so far as it negatives the existence of *mens rea*, and the Rules in M'Naughton's case were for some time quoted with approval by judges as expressing the law of Scotland no less than that of England. (*Gibson*, 2 Broun 332, and *Smith and Campbell*, 2 Irvine 1—*per* Hope, Lord Justice-Clerk.) But they do not now appear to be considered in Scotland. The present state of Scots Law in regard to insanity as a plea or defence is thus expressed by Lord Dunedin, Lord Justice-General, in *H.M. Advocate* v. *Brown* (1907 S.C. (J) 67 at p. 76):—

"In one sense no one can say what insanity is. I do not think if we had all the doctors here who are learned on the subject that any two of them would agree on a definition. It is quite certain that what may be called the scientific view on

[1] The questions put to the 15 judges by the House of Lords after M'Naughton's acquittal were as follows:—

Question 1.—What is the law respecting alleged crimes committed by persons afflicted with insane delusions in respect of one or more particular subjects or persons, as, for instance, where, at the time of the commission of the alleged crime, the accused knew he was acting contrary to law, but did the act complained of with a view, under the influence of insane delusion, of redressing or revenging some supposed grievance or injury or of producing some supposed public benefit?

Question 2.—What are the proper questions to be submitted to the jury when a person, afflicted with insane delusions respecting one or more particular subjects or persons, is charged with the commission of a crime (murder, for instance) and insanity is set up as a defence?

Question 3.—In what terms ought the question to be left to the jury as to the prisoner's state of mind at the time when the act was committed?

Question 4.—If a person under an insane delusion as to existing facts commits an offence in consequence thereof, is he thereby excused?

insanity has greatly altered in recent years, and Courts of Law, which are bound to follow, so far as they can, the discoveries of science and results of experience, have altered their definitions and rules along with the experts. . . . . Acts of Parliament cannot deal with scientific opinions, and therefore it is left to juries to come to a common-sense determination on the matter, assisted by the evidence led and any direction which the judge can give."

Reference may also be made to the direction of Lord Moncreiff, Lord Justice-Clerk, in *H.M. Advocate* v. *Miller* (1874, 3 Coup. 16).

Conclusions.

In accordance with the views expressed above we have come to the following conclusions:—

1. The legal criteria of responsibility expressed in the Rules in M'Naughton's case should be abrogated, and the responsibility of a prisoner should be left as a question of fact to be determined by the jury on the merits of the particular case.

2. In every trial in which the prisoner's mental condition is in issue, the Judge should direct the jury to answer the following questions: (*a*) Did the prisoner commit the act alleged? ; (*b*) if he did, was he at the time insane? ; (*c*) if he was insane, has it nevertheless been proved to the satisfaction of the jury that his crime was unrelated to his mental disorder?

3. We would further suggest that the present practice of dealing with persons who are found insane upon arraignment is unsatisfactory and might be reconsidered. As the law stands a finding of insanity upon arraignment may result in a man—conceivably unconnected with and innocent of the offence with which he is charged—being sent to a criminal lunatic asylum. Experience shows that it is always best, if possible, to let the prisoner stand his trial and plead. This course does away with his after grievance that he was never convicted of the offence with which he was charged, and that in fact he never was tried for it. In the vast majority of cases there is no reason to doubt that the man did commit the act, but the fact that the crime was never brought home to him, and that, being found insane, he has been ordered to be detained during His Majesty's pleasure, does give him a grievance of which he makes the utmost use, and to which it is difficult to give a satisfactory answer. When a person is found unfit to plead we would suggest that a plea of "Not Guilty" should be recorded by the Court and the trial on the facts allowed to proceed—in his absence if he cannot properly be present in Court, arrangements being made for him to be represented by counsel and solicitor. We presume that to enable this course to be adopted some amendment of the Criminal Lunatics Act, 1800 (39 and 40 Geo. III., c. 94), Sec. 2, would be necessary.

4. We would also suggest that the law be amended to enable the verdict now expressed as *Guilty but insane* to rank as a conviction for the purposes of appeal to the Court of Criminal Appeal.

5. We are of opinion that it would not be practicable to have medical assessors to the Court in cases where insanity is raised as a defence to a criminal charge. We think, however, it might be possible to have a panel of accredited experts appointed, any of whom could be called on by the Court to give evidence, subject to cross-examination by either side, and without any derogation from the right of either side to call its own expert witnesses.

The report, which is signed by Dr. Nathan Raw (Chairman), Dr. R. Worth (Hon. Gen. Sec.), and Prof. G. M. Robertson (President), concludes with the remark: "We do not favour any amendment of the Criminal Lunatics Act, 1884, the provisions of which are both humane and necessary."

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

A New Anæsthetic Gas.

MUCH interest has been excited by a demonstration of the anæsthetic properties of ethylene, carried out in the physiology department of Chicago University. The attention of Dr. A. B. Luckhardt and Mr. J. B. Carter was directed to this gas by the discovery that carnations in Chicago greenhouses showed a most undue tendency to somnolence. The botanical department having identified the ethylene content of the illuminating gas as the chief culprit, the physiological department determined to study its effects on animals. Frogs, mice, rats, rabbits, guinea-pigs, and kittens were all anæsthetised with a mixture of 90 parts C_2H_4 and 10 parts O_2 in one-half the time necessary to anæsthetise the same animals with the same proportion of nitrous oxide. Experimenting next with the dog they showed that deep anæsthesia could be maintained for as long as 45 minutes, that there was no effect on blood pressure, and that recovery on ceasing to administer the gas was always rapid and complete. Finally, the two experimenters anæsthetised each other and a number of volunteers, their experience being that induction of anæsthesia by this method is not unpleasant and leaves no after-effects beyond temporary ataxia and some feeling of nausea.

"Hygeia."

The contents page of the first number of *Hygeia*, to be published in April, suggests a very readable little journal. Dr. Victor C. Vaughan writes on Pasteur and his work; Dr. Woglom asks, Does Meat Cause Cancer? while Dr. Arthur J. Cramp, who has for years done admirable work in charge of the propaganda department of the American Medical Association, begins a series of articles on patent medicines. Besides several more signed articles there will be 20 pages devoted to short paragraphs under various seductive titles, such as Plain Facts about Health and Disease, Around the Clock with Baby, and Simple Simon and the Doctor. The making of health propaganda attractive to the general public, so that they will be willing to pay for it, and therefore possibly even to read it, is an experiment worth watching.

Sensations for the Credulous.

The leading daily papers have recently given a considerable amount of space to reports from Escanaba, Mich., of a girl who persisted in living, remaining conscious, and desirous of getting up and going for a walk with a temperature of 114°F. The old hot-water bottle trick (for such it eventually proved) can rarely have met with such astounding success in the history of malingering. At the same time it is announced that Dr. Abrams, who by his remarkable technique should be able to tell from a drop of dried blood the nicer shades of the patient's religious faith, has now discovered that his "sphygmobiometer" can detect the presence of water, oil, and minerals, and even their quantity and the depth at which they will be found. If clients are paying to be told on the evidence that they have syphilis or tuberculosis, the claims of the inventor should be given a thorough scrutiny and the results published.

Illicit Alcohol.

The incautious have paid recently a heavy toll through the consumption of illicit alcohol. A full dozen middle Western States have Bills before them for the stricter enforcement of prohibition. In Kansas the proposed legislation would qualify as murder the selling or giving away of "intoxicants that cause death." In Oklahoma this crime is already punished with the murder penalty; in Iowa and Michigan it is to be manslaughter; and in Ohio "second degree" murder.

March 17th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. D. J. O'Malley is placed on the retd. list with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Majors to be Lt.-Cols.: R. N. Hunt, vice Lt.-Col. R. F. Ellery, ret. pay; and Bt. Lt.-Col. E. Ryan to complete estabt.

Capts. E. Catford and J. H. Pendered retire, receiving a gratuity, and are granted the rank of Maj.

Capt. D. W. Pailthorpe is restd. to the estabt.

Temp. Capt. R. Murphy to be Lt.

TERRITORIAL ARMY.

Capt. J. B. Foubister (late R.A.M.C., T.F.) to be Capt.

Capts. H. L. Garson, J. S. Hudson, and J. Paton to be Majs. (prov.).

Capt. L. B. Cane to be Maj.

Capt. G. W. Deeping relinquishes his commn. and is granted the rank of Maj.; and Capt. R. T. Jones relinquishes his commn. and retains the rank of Capt.

Capt. W. P. Croker, R.A.M.C., to be Div. Adjt., 47th (2nd London) Div., T.A., and School of Instruction, vice Capt. J. H. Barry, R.A.M.C., vacated.

INDIAN MEDICAL SERVICE.

Capt. W. D. Keyworth to be Maj.

The King has approved the grading of the following officers, who have been granted permanent commissions since the outbreak of the war as follows: Capts. S. R. Prall and H. Williamson; and Lt. C. A. Kirton.

C. M. Nicol to be Capt. A. L. Watts to be Lt.

Maj. (actg. Lt.-Col.) D. C. V. Fitzgerald relinquishes his actg. rank on ceasing to comd. an Indian Central Hospital.

Capt. Amrita Nath Banerji relinquishes his temp. commn.

Lt.-Col. and Bt. Col. H. B. Fawcus, R.A.M.C., has been appointed Hon. Physician to the King, vice Maj.-Gen. Sir Alfred Blenkinsop (ret.).

Maj. T. J. Crean, R.A.M.C. (retd.), died at his residence in Mayfair on March 25th, aged 50.

The death is announced of Inspector General W. H. Lloyd, R.N., on April 2nd, at the age of 87. Inspector General Lloyd, who was honorary surgeon to the King, was the oldest officer of his rank in the Navy.

Obituary.

THOMAS JOSEPH CREAN, V.C., D.S.O., F.R.C.S. IREL.,

MAJOR, R.A.M.C. (RETD.).

Major Crean, who died at his residence in Queen-street, Mayfair, on March 25th, in his fiftieth year, was the son of Michael Theobald Crean, a barrister and a member of the Irish Land Commission. Thomas was born in Dublin, and received his early education at Clongowes College, afterwards studying medicine and qualifying L.R.C.P., L.R.C.S. Ireland in 1896. He was assistant master of the National Maternity Hospital in Dublin, went out to South Africa and entered on general practice at Boksburg, Transvaal, and when interrupted by the war in 1899 joined the Imperial Light Horse as a trooper. In 1901 he was appointed surgeon-captain in the regiment and was wounded at Elandslaagte and at Tygerskloof. It was during this latter action that he won the Victoria Cross, the official record stating that "During the action with De Wet at Tygerskloof on Dec. 18th, 1901, the officer continued to attend to the wounded in the firing line, under a heavy fire at only 150 yards range, after he had himself been wounded, and only desisted when he was hit a second time, as it was at first thought, mortally wounded." After the war he took up practice again, this time on the West Coast of Africa. When war broke out in 1914 he rejoined the army as a major in the R.A.M.C., and served with the 1st Cavalry Brigade, being mentioned in despatches and receiving the D.S.O. In 1916 he was appointed officer in command of the 44th Field Ambulance in France. On his return, broken in health but not in spirit, he became medical officer in charge of the hospital at the Royal Enclosure on the Ascot Race-course. In addition to the Victoria Cross his war honours included the Queen's Medal with five clasps and the King's Medal with two clasps. He also held the Royal Humane Society's Medal for saving life at sea and was awarded the Arnott Memorial Gold Medal in 1902. In the same year the Royal College of Surgeons in Ireland conferred upon him the honorary Fellowship. It is not surprising that a man of Crean's stamp should have also gained honours in the football field. He was a fine Rugby forward, a member of the Irish International XV. in 1894–96 and of the English team in South Africa in 1896. He married in 1905, Victoria, daughter of Señor Don Tomas Heredia, of Malaya, by whom he had one son and one daughter. Known always to his friends as "Tommy," Crean's death leaves a gap in the circle that will not be easy to fill. Generosity, discretion, and tact were his, and more important still, invincible cheerfulness and courage.

Correspondence.

"Audi alteram partem."

HERNIA IN GENERAL PRACTICE.

To the Editor of THE LANCET.

SIR,—As a general practitioner I wish to say how useful your articles on Modern Technique in Treatment are to me, and to hope that there will be more of them on the present lines. The article on the Treatment of Oblique Inguinal Hernia in Adults, in your issue of March 24th, is a good example; the young operator who may have *seen* many such operations is up against a very different proposition when he *does* his first radical cure. The text-books that generally say "the sac is easily recognisable, isolated, and cleaned . . . . " are not much help to him, looking for it and trying not to feel rattled at not finding it at once. I notice that Prof. A. W. Sheen says "*the whole sac must be removed.*" Do not most surgeons leave the blind lower end of the sac, if there is any difficulty in removing it? Another small point, but most important for beginners, in my opinion, is that the external oblique fascia should be separated back from the underlying structures on each side after division, by the finger; the sutures joining Poupart's ligament to the muscle above the canal are then easily passed. My comments are perhaps superfluous, but I make them to emphasise the importance to us general practitioners of detailed information in these articles.

I am, Sir, yours faithfully,

L. P. GIBSON, M.R.C.S., L.R.C.P. Lond.

Cowes, I.W., March 25th, 1923.

*** We thank our correspondent for his generous appreciation. Experience in recognising the hernial sac can readily be obtained by assisting or even watching other people operate. After the cremasteric fascia has been divided, the cord should be pulled up and spread out over the middle finger. When this is done, the bluish white sac, with the convex edge, will be seen shining through the other coverings. It lies in front of the other structures of the cord. Prof. Sheen emphasises the fact that the ligation must occur right up at the neck of the sac, because if a small portion is left a recurrence is certain to take place. No harm may follow from leaving the lower part of the sac, though it is usual to remove it. It is unnecessary to separate the external oblique far back from the underlying structures if the Johns Hopkins operation is carried out. In this the upper margin of the cut external oblique is brought down and sutured, with the lower margins of the internal oblique and transversalis muscles, to the upper surface of Poupart's ligament. The lower border of the external oblique is made to overlap the upper flap. Firm union will then take place between two broad surfaces. This procedure is probably followed by fewer recurrences than happen with any other.—ED. L.

ANNULAR SHADOWS IN THE RADIOGRAM.

To the Editor of THE LANCET.

SIR,—I read with great pleasure the article on the X ray examination of the chest by Dr. Bernard Hudson and Mr. P. G. Sutton in your issue of March 17th, but I quite agree with the views put forward by Dr. C. H. Brodribb in his letter in your following issue on annular shadows in the radiogram. I think it would be impossible that a cavity of sufficient size to be seen in an X ray photograph should give no physical signs, and, moreover, these annular shadows are seen so frequently at one time, and disappear at another, that it is evident they cannot be due to cavitation. I think it more likely that the shadow is due to an annular adhesion produced by a local pleurisy, which would explain the absence of physical signs.

I am, Sir, yours faithfully,

ANDREW TRIMBLE.

Central Tuberculosis Institute, Belfast, March 27th.

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—I have only recently had the opportunity of reading in your issue of March 10th a letter from Dr. A. H. Croucher, who first applied Mr. Spahlinger's methods in England in 1913. I can claim an earlier association with this treatment, as I first became interested in it by controlling the experimental work. In 1912 I had the opportunity of using the vaccines on a human being. The patient suffered from lymphoma of the neck (right and left sides) which were ulcerated and suppurating; on the manubrium sterni there was an ugly patch of lupus about 3 inches in diameter. The patient had been treated in two hospitals over periods of nine months and four months, but the disease had resisted all ordinary methods of treatment.

A complete recovery was effected after 16 injections of Spahlinger's vaccine. I consider it remarkable that eight tuberculous glands, all suppurating, as well as a large patch of lupus, could be made to disappear with so limited a treatment. Ever since her recovery, in 1912, this patient has lived in very poor and unfavourable conditions. Notwithstanding this, she has remained in perfect health all these years, all that is evident at present being a few scars under her chin. Of the accompanying photographs the first three were taken after two, four, and 12 injections respectively in 1912, and the other two show the patient's condition in 1923.

I was associated in the preliminary note presented to the Academy of Medicine at Paris in 1914 and I have delayed further publications in order to avoid increased demands for remedies which cannot yet be supplied. In view, however, of the present situation, I believe that my testimony may be of some value. After Mr. Spahlinger's return from England in October, 1914, I was able to treat 23 cases with partial sera, ferments, and vaccines. Most of these patients were in an acute or advanced state; other methods having failed to improve their condition, they might certainly have been considered as "incurable." As a result of the laboratory being closed during Mr. Spahlinger's absence in London, 1913–14, no remedies were produced during that period, and the supply of serum became exhausted early in 1915, thus stopping the treatment of 10 advanced cases. The entire vaccine supply became exhausted at the end of 1915.

Of the 23 cases treated by me, three subsequently died from tuberculosis, although they made considerable improvement until the want of serum stopped the treatment. Two of the patients, who were quite well and had resumed work in 1916, died of influenza during the 1918 epidemic, one died of another disease, five have been lost sight of. The remaining 12 patients have all been traced; they have now been at work for seven years, one of them being a bad case of bilateral tuberculosis of the kidneys complicated by tuberculosis of the spine.

In a report during October, 1915, I made this emphatic statement: "As long as a consumptive is living, no matter how far gone his case may be, he can be cured with the Spahlinger treatment, without being obliged to go to the mountains." Since that date the amount of clinical evidence over a long period goes to show that this statement was correct, and I consider that if the complete remedy had been available I should probably have saved all of my 23 cases—excepting, of course, those who died from diseases other than tuberculosis. It is important to note that the patients who went through the course of vaccines are alive to-day and carrying on their normal occupations.

I am, Sir, yours faithfully,

EDMOND LARDY.

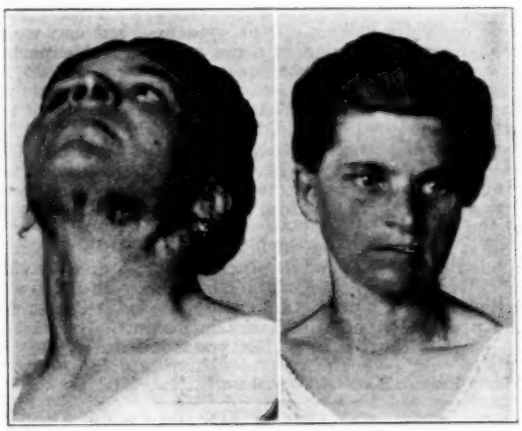
Bevaix (Neuchâtel), Switzerland, March 21st, 1923.

DR. EDMOND LARDY'S CASE OF LUPUS AND SUPPURATING LYMPHOMA TREATED WITH SPAHLINGER REMEDIES.

Condition in 1912.

After two injections. After four injections. After 12 injections.

Condition in 1923.



ALCOHOL AND INSANITY.

To the Editor of THE LANCET.

SIR,—Dr. Stanley Wyard in THE LANCET of March 24th suggests that the reason why the virtual elimination of alcoholism during the war had no appreciable effect on the occurrence of insanity is to be found in the "greatly increased mental stress" which prevailed in that period. This increased mental stress, it would seem, took the place of alcoholism as a detrimental agency, and is thus assumed—for there is no evidence—to have been during the war years the chief factor in the causation of insanity.

This is a remarkable proposition, and I can hardly imagine that it corresponds to common belief or that it will command the "almost universal acceptance" Dr. Wyard anticipates. Most psychiatrists who have had experience in this special field of work—e.g., on pensions boards—seem to have arrived at very modest estimates of the effect of war stress in causing insanity, even in the case of the actual combatants. It would certainly be somewhat curious if this same influence were a factor of such great potency in producing insanity in the civil population.

I am, Sir, yours faithfully,

Broadmoor State Asylum, Crowthorne, Berks, April 2nd, 1923. W. C. SULLIVAN.

SERUM DOSAGE IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—I have read with much interest Dr. C. B. Ker's note on this subject in your issue of March 31st. He commends yet criticises the memorandum of the Ministry of Health. He considers that to administer 8000 units in any case is both safe and efficient, and while admitting that such a dose, or much larger ones, are often necessary, he does not consider 8000 units necessary in mild cases and regards such a minimum dose as likely to lead to waste of money.

I do not think anyone can disagree with his contention that there are cases which do not require such a dose, but unfortunately as a profession we are not all capable of selecting them. If Dr. Ker tells us a given case is mild we can thoroughly rely upon his opinion, for we know it comes from an expert who carefully weighs all the evidence, but can we so rely upon the opinion of those who are not experts? I say from much experience that we cannot do so. I know that it is not always a simple matter for me to tell at once with precision what the severity of the attack is or is going to be, and it must be more difficult for those of less experience; indeed, one knows this to be so. Amongst those who are inexperienced the tendency undoubtedly has been to give too small doses and to give the dose irrespective of the severity of the disease.

If a minimum dose of 8000 units is both safe and efficient and is applied in practice, then a great saving of child life will occur in the community and this will far outweigh in monetary value the added cost for the production of diphtheria antitoxin.

I am, Sir, yours faithfully,

FREDERIC THOMSON.

North-Eastern Hospital, Tottenham, N., March 31st, 1923.

BURIED RADIUM EMANATION TUBES.

To the Editor of THE LANCET.

SIR,—In an annotation on the Treatment by Radium in THE LANCET of March 10th the statement occurs: "But the American recognition of the possibility of burying small, unscreened glass tubes in tumours made possible the deep use of beta rays." Colwell and Russ in their book "Radium and X Rays and the Living Cell," published in 1915, state (p. 78): "Joly[1] and Stevenson[2] have succeeded in using the emanation when it is sealed in glass tubing so thin that it may be inserted in an ordinary hypodermic needle. Its insertion into growths thus becomes much simplified and the beta rays are largely utilised."

[1] Proc. Royal Dublin Society, May 8th, 1914.
[2] Brit. Med. Jour., July 4th, 1914.

And at the meeting of the British Medical Association, held in Aberdeen in 1914, the Dublin method was criticised as affording too little screening from beta rays. The point in the Dublin method is not only the utilisation of primary beta rays, but also the employment of a number of sources of these rays, by distributing several capillaries at one time in a tumour in order to obtain as uniform a radiation of a tumour as possible. These fine capillaries containing emanation were first made by Mr. R. J. Moss at the Royal Dublin Society Radium Institute in April, 1914, and similar tubes are now extensively used in America, where the Dublin work is recognised. I have occasionally buried bare capillaries in tumours and left them there, but the usual method in Dublin is to use 6 to 12 serum needles, each containing one of these capillaries and to withdraw them when a sufficient dose has been given. As the wall of the serum needles is only 0·3 mm. thick this is principally a beta ray method of treatment, and was originated in Dublin.—I am, Sir, yours faithfully,

WALTER C. STEVENSON,

Surgeon Orthopædic and Dr. Steevens' Hospital, Dublin. Dublin, March 26th, 1923.

THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

To the Editor of THE LANCET.

SIR,—In reply to Mr. W. Stuart-Low's letter in your issue of March 31st I can only imagine that he must have misread both my original communication and that of Sir William Milligan. In the former it was clearly stated that Gram-positive diplococci were present in both the cerebro-spinal fluid and in the fluid withdrawn from the subarachnoid space of the posterior fossa. Even Sir William Milligan, keen exponent of the "serous" theory though he be, agrees from this fact that the case was undoubtedly one of "early and genuine septic meningitis." Mr. Stuart-Low gives no definition of his meaning of "serous" meningitis in quoting a mortality for it of 5 per cent., and as Mr. Edward Davis pointed out it would be difficult to correlate this percentage with Mygind's series of 133 fatal cases, in 70 per cent. of which the cerebro-spinal fluid was sterile.

The academic discussion as to the exact delimitation of serous from septic meningitis is, after all, of little import compared with successful means of dealing with cases where operation is decided upon, and if Mr. Stuart-Low's method of positive suction has produced three out of four successful cases it must obviously be of the greatest importance. It will be interesting to compare these results with Mr. G. J. Jenkins's series when it is published.

I am, Sir, yours faithfully,

Eton, March 29th, 1923. HENRY L. MARTYN.

LONDON PANEL COMMITTEE: HOLIDAY LOCUM SCHEME.

To the Editor of THE LANCET.

SIR,—The London Panel Committee in 1922 instituted a scheme whereby the employment of whole-time locum-tenents during the holiday season can be avoided. Under the scheme practitioners can by arranging themselves into groups of not less than five members, all living within a radius of one mile, undertake the care of the practice of one member whilst away on holiday. The working of this scheme in 1922 proved very satisfactory and quite economical. I shall be pleased to send full information as to the scheme to any practitioner, or group of practitioners, in London, who may be interested, and as the holiday season is drawing near I would ask that early application for particulars should be made.

I am, Sir, yours faithfully,

ROBERT J. FARMAN,

Secretary, Panel Committee for the County of London. Staple House, 51, Chancery-lane, W.C. 2, March 27th.

*** This excellent scheme was dealt with in a leading article in THE LANCET of May 6th, 1922.—ED. L.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Dangerous Drugs and Poisons Bill.

THE Dangerous Drugs and Poisons (Amendment) Bill was considered by Standing Committee B of the House of Commons on Tuesday, March 27th. Mr. PONSONBY presided.

Mr. BRIDGEMAN (Home Secretary) moved the following amendment to Clause 2 of the Bill:—

"No proceedings for an indictable offence against this Act shall in England or Wales be instituted except by or with the consent of the Attorney-General or by the Director of Public Prosecutions, and no person shall, on conviction for any offence of contravening or failing to comply with any regulation under this Act relating to the keeping of books or the issuing or dispensing of prescriptions containing drugs to which this Act applies, be sentenced to imprisonment without the option of a fine or to pay a fine exceeding fifty pounds, if the court dealing with the case is satisfied that the offence was committed through inadvertence and was not preparatory to or committed in the course of or in connexion with the commission or intended commission of any other offence against this Act."

He explained that the amendment was the first of a series which he proposed to move in order to meet certain objections to the Bill which had been put forward by the medical profession and the Pharmaceutical Society.

The amendment was agreed to.

Mr. BRIDGEMAN moved a further amendment to Clause 2 to provide that where a person convicted of an offence under the Act was a company, the chairman and every director and every officer concerned in the management of the company should be guilty of a like offence unless he proved that the Act constituting the offence took place without his knowledge or consent.

The amendment was agreed to.

On Clause 3 Mr. BRIDGEMAN moved to leave out the words "in actual practice" after "registered medical practitioner" in Subsection (1) of the clause.

Mr. HAYDAY asked why the words were to be left out.

Sir S. RUSSELL-WELLS pointed out that the words "in actual practice" had an extremely technical significance in the medical world. Medical officers of health, for example, were not in actual practice.

Lieut.-Colonel FREMANTLE said that if his hon. friend was taken ill and these words were not taken out of the Bill they would not be able to prescribe for him in order to save his life.

The amendment was agreed to.

Mr. BRIDGEMAN moved a further amendment to Clause 3 as follows:—

"Provided that if a seller is reasonably satisfied that a registered medical practitioner desiring to purchase a poison urgently requires it for the purpose of his profession, but is, by reason of some emergency, unable, before delivery, either to furnish to the seller an order in writing duly signed, or to attend and sign the book, the seller may send the poison to the purchaser to be handed over to him either in exchange for such an order or on an undertaking by the purchaser to furnish such an order to the seller within the 24 hours next following. If any purchaser by whom any such undertaking as aforesaid has been given fails to deliver to the seller a signed order in accordance with the undertaking, or if any person for the purpose of obtaining delivery of any poison under the foregoing proviso makes a statement which is to his knowledge false, he shall be deemed to have procured the commission of an offence under the said Section 17."

The amendment was agreed to.

Mr. BRIDGEMAN moved the following new clause:—

(1) Where any poison to which Section 17 of The Pharmacy Act, 1868, applies is supplied on and in accordance with a written prescription given by a registered medical practitioner under and in accordance with the provisions of the Acts relating to national health insurance, the seller of the poison shall not be required to make any entry in the book in accordance with the requirements of the said section.

(2) The said Section 17 shall have effect as if for the words "labelled with the name of the article and the word poison, and with the name and address of the seller of the poison," there were substituted the words "labelled with the name and address of the seller of the poison, with the word 'poison,' and with the name of the poison, and, in the case of a preparation which contains a poison as one of the ingredients thereof, with such particulars as to the proportion which the poison contained in the preparation bears to the other ingredients as may be prescribed by Order in Council."

He said he understood the medical profession and the chemists were agreed upon the clause.

The clause was read a second time and agreed to.

Colonel FREMANTLE said that as chairman of the medical Members of the House of Commons he wished to say how much obliged they were to the Home Secretary for having met their points in regard to this Bill. Those points had been raised in the public interest and not to further professional interest. He thought it would be recognised by all those who knew the facts that two or three very long-standing difficulties had been removed by this Bill as amended, and at the same time they had helped and not hindered the policy of the Government in dealing with the dangerous drugs traffic.

Mr. SHINWELL said that British seamen touching such ports as Antwerp, Hamburg, or the Chinese or Japanese ports were often offered inducements to carry drugs to this country. The penalties imposed under the Bill were very drastic, and he asked the Home Secretary to give an assurance that notices would be placed in the forecastle of British merchant vessels so that seamen might know the risks they ran if they engaged in this traffic.

Mr. BRIDGEMAN said that he thought that the matter raised by Mr. Shinwell was one which affected the administration of the Board of Trade, but he would represent to the Board of Trade that something should be done on the lines suggested by the hon. Member. He wished to reciprocate the remarks of Colonel Fremantle and to thank the medical Members of the House and the Pharmaceutical Society who had been good enough to meet him so fairly in this matter. It would be the last thing that he would wish to do to cast any slur or suspicions on those gentlemen, and he was glad that any idea of that kind had been removed. He was confident that the medical profession and the pharmacists would give him the support which would be of extreme value in putting down this horrible traffic.

The Bill passed through committee and was ordered to be reported with amendments to the House.

HOUSE OF LORDS.

TUESDAY, MARCH 27TH.

Certificates for Mentally Infirm Ex-officers.

Lord SANDHURST asked the Government whether it was a fact that ex-officers who were mentally incapacitated and for that reason were drawing disablement pensions were in addition to being examined from time to time by a pensions board required as a condition of payment of each instalment of pension to obtain a certificate of their mental infirmity not only from a magistrate or minister of religion but also at their own expense from a medical practitioner: and whether the requirement might not safely be dispensed with.

The Earl of MALMESBURY (Lord-in-Waiting), who replied on behalf of the Ministry of Pensions, said that the position to which the noble lord had drawn attention arose out of the provisions made under Section 335 of the Lunacy Act, 1890, for overcoming the legal difficulty of obtaining a valid receipt for moneys due to a person incapable of managing his own affairs. Those provisions were made for the protection of the pensioner himself as well as for the protection of the public funds. He believed that no charge for a certificate was ever made by medical officers in charge of approved mental institutions, and so far as he was aware no charge was made by the magistrates or ministers of religion. This procedure could not be departed from in the more serious cases, which were fortunately very rare, and Lord Malmesbury thought that Lord Sandhurst was unduly apprehensive on the point. The vast majority of the more serious cases were in approved institutions. In cases of a milder character it would be generally found possible to dispense with the procedure prescribed by the Lunacy Act and to proceed under the authority of a Treasury Warrant and to pay the pension on a certificate provided by one only of the prescribed attestors, who need not be a medical practitioner. This was a growing practice of the Ministry of Pensions, and it was their intention in the future to act even more fully under that system. Medical boards were held much less frequently than formerly and rarely more than once a year. In regard to the second part of the question, he did not think any medical certificate was required when the pension was paid to the pensioner himself.

While it was not quite relevant to the noble lord's question, Lord Malmesbury said he might be permitted to indicate the comprehensive measures adopted by the Ministry of Pensions in their endeavour to cure or alleviate the condition of those officers and men who unfortunately suffered from mental and nervous diseases due to their war service. Approximately, 75,000 officers and men had been pensioned for nervous diseases alone and had been entitled to receive free medical treatment from the Ministry. Most efficacious forms of treatment had been provided on a most adequate scale with gratifying results. The Ministry had instituted courses of training for medical men in one of their neurological hospitals, and hospitals and clinics had been established staffed with neurological specialists sufficient to meet the very great demand for accommodation. The Ministry had now 14 neurological hospitals, besides a large number of clinics for out-patient treatment. Eighteen months ago it was estimated that of the patients treated in several of the

neurological hospitals belonging to the Ministry between 75 and 80 per cent. had obtained employment and no longer required treatment. In one neurological hospital where the more serious cases were accommodated 134 patients were treated during 1922, and of these only 9 had to be certified as insane, whilst 68 were discharged recovered and 12 were transferred to other institutions, some of them for industrial training. An important part of the continuous treatment provided in the Ministry's neurological hospitals consisted of occupational training.

HOUSE OF COMMONS.

TUESDAY, MARCH 27TH.

Venereal Disease.

Mr. BURGESS asked the Minister of Health the number of men and women, respectively, who were treated for venereal disease in hospitals and other places during 1918, 1919, 1920, 1921, and 1922.—Mr. NEVILLE CHAMBERLAIN replied: The following table shows the number of persons dealt with at the treatment centres for venereal disease in England and Wales during the years in question. These numbers include persons who applied for treatment but were found not to be suffering from venereal disease. Separate figures for males and females are not available for 1918 and 1919.

Year.	Males.	Females.	Total.
1918	—	—	58,000
1919	—	—	128,692
1920	103,567	40,367	143,934
1921	114,692	48,808	163,500
1922	114,632	47,684	162,316

Pension Appeals.

Mr. GRUNDY asked the Minister of Pensions whether he was aware that many men who were successful in their appeal to the pensions appeals tribunal did not receive a further award of pension, and that this was due to the man being re-examined by a board on which a deputy commissioner of medical services sat who was a member of the board that previously examined the man and rejected his claim to be suffering from a disability due to war service; and whether, in view of the grave dissatisfaction that existed among ex-Service men that although successful in appeals against the Ministry decisions they did not receive a pension, he would make arrangements for a travelling medical board to work in conjunction with the pensions appeals tribunal, so that they might assess the claimant's degree of disability independent of any local feeling or prejudice that might exist.—Captain CRAIG replied: I assume that the hon. Member's question relates to decisions of the pensions appeal tribunals "setting aside" final awards. As I have before explained in this House, such a decision merely implies that, in the opinion of the tribunal, the disablement of the man has not arrived at a point at which it is unlikely within a reasonable time to get either worse or better, and that therefore the time has not arrived to make the award final. It does not mean that the tribunal consider the assessment to be wrong at the time. It means that the tribunal think it may become wrong later in case of a change in the man's condition, and that they therefore wish to defer a final decision. With regard to the alleged dissatisfaction amongst ex-Service men that although successful in appeals they do not receive compensation from the Ministry, I would point out that it must frequently happen that a board examining a man shortly after the tribunal have set aside his final award find that the man's degree of disablement is precisely the same as when the final award was made and that consequently there is at the time no ground for any further award.

Mr. FREDERICK ROBERTS asked the Minister of Pensions on what basis a final award was given to a man suffering from a disease due to war service; and was he aware that medical opinion agreed that it was not possible at any time to say that a man's condition, as the result of disease, had reached a final and stationary condition.—Major TRYON replied: The principles on which final wards are made are laid down in the War Pensions (Final Awards) Regulations, 1922, and the War Pensions (Final Awards) Amendment Regulations, 1923, but I would refer the hon. Member more particularly to regulation 8. As regards the second part of the question, the hon. Member will see from these regulations that a final award is made in a disease case when, taking a reasonably near view, it has reached a condition in which further material fluctuation is unlikely.

Mr. BARKER asked the Minister of Pensions the number of cases of officers heard before the appeal tribunals during the two years ending Dec. 31st, 1922; the number of cases of non-commissioned officers and the number of cases of privates heard before the appeal tribunals during the same period; and the number of successful appeals in each rank per cent.—Major TRYON replied: Approximately 1400 appeals by officers, and 70,000 appeals by other ranks were decided by the entitlement tribunal during the period mentioned. The percentage of these appeals allowed were 48 and 26 respectively. The form in which the records of my department are kept do not enable me to give separate figures for non-commissioned officers and privates.

WEDNESDAY, MARCH 28TH.

Death-rate from Cancer.

Major MOLLOY asked the Minister of Health what was the death-rate from cancer in Great Britain at the present time: what was the death-rate from this disease during each of the previous four decades; what proportion of deaths from all causes, other than accident or violence, were due to this scourge: and what financial provision was made by His Majesty's Government towards assisting those engaged in fighting this plague by their endeavours to ascertain its causes and the best means of combating its ravages.—Mr. NEVILLE CHAMBERLAIN replied: The standardised death-rates from cancer in England and Wales in the four decades, 1881–1890, 1891–1900, 1901–1910, and 1911–20, and in the year 1921 were 610, 767, 867, 966, and 1007 per million of the population respectively. In England and Wales the cancer deaths during the above decades represented 3·2, 4·3, 6·1, and 8·0 per cent. of the total deaths from all causes, other than those due to accident and violence. The promotion of cancer research is among the purposes for which an annual subsidy is made by Parliament to the Medical Research Council, and the Council from time to time make grants in aid of investigations which may bear on the incidence, causation, and treatment of cancer. The Council also have in their charge a quantity of radium salt belonging to His Majesty's Government, and with this have organised an investigation into the treatment of cancer by means of radium in ten different hospitals in this country. My hon. friend is, no doubt, aware that an extensive research into the causes of the disease has for some time past been undertaken by the Imperial Cancer Research Fund.

Blind School-children.

Mr. SHORT asked the Minister of Health the number of children of school age who were blind or partially blind.—Mr. NEVILLE CHAMBERLAIN replied: The latest estimates which I have received from local education authorities in England and Wales of the number of children of school age in their areas who are blind or partially blind relate to the year 1920 and give a total of 5800.

The Spahlinger Treatment.

Mr. CECIL WILSON asked the Minister of Health whether his attention had been called to the Spahlinger treatment for tuberculosis; whether his department had made or could make any report in regard to it; and whether the British Red Cross Society had allocated any and, if so, what sum for this treatment.—Mr. NEVILLE CHAMBERLAIN replied: As regards the first two parts of the question, I would refer the hon. Member to the previous answers given on the subject. As regards the last part, I understand that certain negotiations have been taking place between the British Red Cross Society and M. Spahlinger, but so far as I am aware no definite arrangements have yet been concluded.

Pension Appeals.

Mr. PIELOU asked the Minister of Pensions the number of appeals to the assessment appeals tribunal up to Dec. 31st, 1922, showing the number allowed by the tribunal and the number disallowed by the tribunal.—Captain CRAIG replied: Approximately 13,050 appeals against final awards were decided by the tribunal up to Dec. 31st, 1922. Of these, about 62 per cent. had the final award confirmed unaltered; 19 per cent. had the final ward confirmed at a higher assessment; and 19 per cent. were set aside by the tribunal.

Mr. PIELOU also asked the Minister of Pensions the figures showing the number of final awards made up to Dec. 31st, 1922, as follows: Final awards of less than 20 per cent., including nil awards, and final awards of more than 20 per cent.—Captain CRAIG replied: The number of awards which have become final awards up to the date mentioned is approximately as follows: Nil and less than 20 per cent. awards, 153,000; awards of 20 per cent. and over, 40,000.

Mr. STEPHENS asked the Attorney-General, if, in view of the complaints with the decisions of the pensions appeal tribunals, he was prepared to appoint a special committee to inquire into the procedure and method of arriving at decisions of those tribunals, such committee to be comprised of representatives of the various ex-Service men's associations, of the trade-unions, and of the Ministry of Pensions, so that it might commend the confidence of the working class.—Colonel GIBBS replied: No complaints have reached me of the procedure of pensions appeal tribunals. The

procedure is regulated by rules made by the Lord Chancellor under the statute. He will at any time be ready to consider any recommendations that may be made for its improvement. The methods are the same as those adopted by all tribunals in this country which have to arrive at conclusions of fact, and it does not appear to me that any inquiry into those methods is necessary. I do not accept the suggestion that there is any general complaint against the decisions. The fact that an unsuccessful appellant expresses dissatisfaction cannot be accepted as evidence that a decision is unjust and the British Legion have, on more than one occasion, indicated the confidence of themselves and those whom they represent in the tribunals.

Entitlement and Assessment Tribunals.

Mr. FREDERICK JOWETT asked the Attorney-General, respecting the pensions appeal tribunals, if he would give the names and state the qualifications of the 12 entitlement and the 18 assessment tribunals.—The qualifications of entitlement tribunals are set out in the schedule to the War Pensions (Administrative Provisions) Act, 1919: (1) Chairman, a barrister or solicitor of not less than seven years' standing; (2) a disabled officer who has retired or been demobilised from His Majesty's Forces during the present war whilst suffering impairment, or a disabled man who has similarly been discharged or demobilised; and (3) a duly qualified medical practitioner.

The War Pensions Act, 1921, Section 4, Subsection 3, proviso B, provides that for assessment tribunals "the constitution of the tribunals shall be modified by the substitution for the legal representative of a second medical practitioner having such qualifications as may be prescribed by regulations made under the schedule to the Act of 1919," and the rules made under the schedule provide "that the medical member to be substituted for the legal representative under Subsection 3, proviso B of the War Pensions Act, 1921, shall be a duly qualified medical practitioner of not less than ten years' standing."

Number and Cost of Pensions in 1922.

Mr. TREVELYAN THOMSON asked the Minister of Pensions the total amount of pensions paid during 1922 to, and the number of parents or relatives, other than widows, in receipt of war pensions on account of loss of friends or relatives during the European war.—Major TRYON replied: The average number of pensions in payment by my department during the year 1922 to dependents, other than widows, but including motherless children, was approximately 385,000. The total expenditure on these awards during the same year was about £9,300,000.

Pensions for Insanity.

Sir EDWIN STOCKTON asked the Minister of Pensions how many cases he had had within each of the last six months in which the medical advisers of the Ministry had declined to accept the mental derangement of the applicants as due in any way to or aggravated by war service; whether he was aware that there was growing dissatisfaction with the official treatment of these cases; and whether he would modify the system of treating these cases so as to satisfy this feeling.—Major TRYON replied: The number of rejected applications for pension for insanity were: During September, 34; October, 16; November, 57; December 34; January, 52; and February, 58. I am satisfied that this type of case receives most sympathetic consideration, and I would point out that, in cases of dissatisfaction with the Ministry's decision, there is a statutory right of appeal to an independent tribunal, by whose decision the Ministry is bound.

THURSDAY, MARCH 29TH.

Dangerous Drugs Regulations.

Major MOLLOY asked the Secretary for the Home Department if the amendment to the regulation, dated Oct. 2nd, 1922, amending Regulation 5 of the principal regulation of the Dangerous Drugs Regulations, dated May 20th, 1921, would be annulled.—Mr. BRIDGEMAN replied: Yes, Sir. I propose to make a regulation revoking No. 1 of the amending regulations made on Oct. 2nd, 1922, under Section 7 of the Act.

Permanent Disablement Pensions.

Mr. SHORT asked the Minister of Pensions the number of permanent disablement pensions granted up to date to officers and men.—Major TRYON replied: The number of final awards and pensions now in payment is about 110,000.

Alternative Pensions.

Mr. SHORT asked the Minister of Pensions the total number of alternative pensions now being paid to disabled officers, disabled men, and widows, respectively.—Major TRYON replied: The approximate numbers of awards of alternative pensions at present in payment are: 300 to officers and nurses; 1800 to other ranks; 2200 to widows of officers; and 30,900 to widows of other ranks.

Technical Services of Fighting Forces.

Lieut.-Colonel FREMANTLE asked the Under-Secretary of State for War if the Government had considered the report of the committee dealing with the coördination of the technical services of the Navy, Army, and Air Force; if so, what action, if any, was proposed as a result; and what opportunity would be given for such proposals to be considered and discussed by the House.—Mr. GWYNNE (Financial Secretary to the War Office) replied: The answer to the first part of the question is in the affirmative, and steps are being taken, particularly by the establishment of interdepartmental technical committees, to carry out the necessary detailed measures of coördination. With regard to the last part of the question, it is not proposed to publish the report of the committee.

Schools for Mental and Physical Defectives.

Mr. SHORT asked the President of the Board of Education the number of special schools provided for children of school age who were mentally and physically defective, and the number of children attending such schools.—Mr. EDWARD WOOD replied: The number of special schools for mentally defective children is 199, and on March 31st, 1922, there were 15,975 children on the registers of those schools. The corresponding figures for physically defective children are 203 and 14,419.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—K. C. Chock, Creighton University, U.S.A.; M. K. El Khadem, Liverpool; M. A. Lawson, Royal Free Hosp.; and M. Mc. W. Lopez, Bristol and Univ. Coll.

Medicine.—M. A. Lawson, Royal Free Hosp.

Forensic Medicine.—G. K. Butterworth, St. Mary's Hosp.; M. Hawke, Guy's Hosp.; C. M. John, Madras and Royal Free Hosp.; and M. A. Lawson, Royal Free Hosp.

Midwifery.—G. K. Butterworth, St. Mary's Hosp.; K. C. Chock, Creighton University, U.S.A.; M. Hawke, Guy's Hosp.; H. Hirst, Manchester; M. A. Lawson, Royal Free Hosp.; and H. M. White, Leeds.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. K. Butterworth, K. C. Chock, H. Hirst, M. A. Lawson, and H. M. White.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a recent diet, out of 54 candidates entered the following passed the Final Dental Examination and were granted the diploma L.D.S. R.C.S. Edin:—

Gilbert A. Loots, William Mason, Robert G. Doig, Arthur H. Wynne, Robert P. Anderson, Henry A. Andrew, Frederic L. Jones, Peter B. Laurenson, Henry D. McDonald, Stanley Still, Henry S. Stowe, Bernard Abbott, Elsbery M. Forehand, Claudius A. G. Roose, John MacArthur, John M. Thomson, John H. Millar, Jean M. Keisler, Arthur W. Wallace, Harold Robinson, Alexander Esilman, William A. Sutherland, John Harkness, David S. Middleton, James A. Whitelaw, Stuart L. McIver, and Harold H. Balfe.

The following candidates passed in the subjects of Pathology, Medicine, and Surgery:—

Robert Bell, William Guild, Archibald T. Donaldson, John B. Forgan, Ian D. J. Smith, Henry F. Skinner, Hector G. Robb, Francis Mackenzie, Robert C. Cook, Alexander W. Seaton, and James Barron Cowie.

The following passed in the subjects of Medicine and Surgery:

Thomas E. Mathias, Charles J. Coventry, and David R. Paterson.

UNIVERSITY OF ABERDEEN: SPRING GRADUATION. The spring graduation took place on March 28th. A feature of the graduation was the large number of ex-Service men capped. Practically all the male graduates in medicine had seen active service. In his address at the close of the ceremony, the Vice-Chancellor, Principal Sir George Adam Smith, who presided in the absence of the Chancellor, the Duke of Richmond and Gordon, alluded to these facts as making it a memorable graduation. An interesting coincidence was the capping of father and daughter in the Faculty of Medicine—namely, Ernest St. Clair Henriques, M.B., C.M. (Old Regulations), who graduated M.D., and Stella Grace Alice Henriques. Among the degrees conferred were the following:—

DEGREE OF DOCTOR OF LAWS (LL.D.).

Dr. William Mackie, Fellow and past Vice-President, Edinburgh Geological Society; and Sir George Henry Makins, consulting surgeon, St. Thomas's Hospital and Evelina Hospital for Sick Children, London.

DEGREE OF DOCTOR OF MEDICINE.

George R. McRobert (commendation for thesis), Henry Duguid, Ernest St. Clair Henriques, and Matthew Logg.

DEGREE OF M.B. AND CH.B.

With Second-Class Honours.—*James D. Murray, Louisa B. Park, *Jane E. Riddoch, and *Richard R. Trail.

Ordinary Degree.—Ronald Anderson, Jeannie G. Angus, Joseph W. Balnaves, Jacob M. Bayer, Alexander S. Benzie, Abraham B. Berkowitz, Muriel E. Bruce, Forbes S. Catto, Alex. I. Cheyne, *John H. Clifford, Clement A. Cowie, Alexander Craig, Helena M. Davidson, Robert H. G. H. Denham, Israel M. Dove, James Duncan, Herbert A. Eccles, Jean L. Farquhar, Alexander Findlay, *Robert P. Gammie, Thomas P. Gill, *Wallace J. Gill, Richard O. Girdwood, Ian L. V. L. Gordon, Stella G. A. Henriques, Edward James, William T. B. Joss, Christina F. Kerr, Christina R. Laing, Beatrix B. Law, William M. Ledingham, Solomon Lewin, James P. Lillie, William E. McCulloch, Ian W. MacGregor, David H. MacKenzie, *Joseph M. McKenzie, Christopher D. Macrae, George McD. Mitchell, William R. Mitchell, Gordon G. J. Mutch, *Walter J. Ogilvie, Marjorie I. Outram, Wilson H. G. Park, Alexander W. Paterson, Margaret E. Rankin, Ian M. Rhind, *Johannes de Ridder, Jeanie H. Ritchie, Lawrence D. Robertson, Harry P. Samson, Frederick R. Sleigh, Elizabeth L. L. Smith, Hugh G. T. Smith, Cecil V. Spark, Constance S. Steele, Mary H. Stephen, William H. Stephen, James Strachan, Hilda J. Third (née Badenoch), Dirk Tom, Hugh Trail, Hugh G. Watson, and William W. Wilson.

* Completed Final Medical Professional Examination with distinction.

DIPLOMA IN PUBLIC HEALTH.

Adam Hutton, Victor E. Milne, John I. Moir, and William L. Stephen.

University Prizes.—Fife Jamieson Memorial Gold Medal in Anatomy: Wilfrid Marshall. Keith Gold Medal for Systematic and Clinical Surgery: Alexander Lyall. Shepherd Memorial Gold Medal for "The Principles and Practice of Surgery": Richard R. Trail. Dr. James Anderson Gold Medal and Prize in Clinical Medicine: Alexander Lyall. Matthews Duncan Gold Medal in Obstetrics: William Gunn. The Alexander Ogston Prize in Surgery: Walter J. Ogilvie.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part I., Pathology.—C. P. Allen, A. Ashworth, P. D. Barling, T. Bellis, E. C. Benn, T. A. Clarke, H. A. Cole, R. Cotter, E. A. R. Evans, M. Fisher, F. F. Fuller, G. A. Garrett, M. Godwin, W. J. Griffiths, L. F. Henry, F. C. S. Hinsbeeck, S. Howard, Enid M. Hughes, Bertha H. Irvine, R. C. Jones, E. Miles, D. H. Mills, J. R. Oddy, A. Oscrovitz, E. R. S. Owen, P. Strelitz, A. C. Terry-Thompson, J. J. du Toit, and B. J. van de S. de Villiers.

Part II., Forensic Medicine, Toxicology, Public Health.—J. M. Brodrick, G. E. Church, R. Y. Dawbarn, J. C. Drummond, Clara M. V. Gleave, D. C. G. Hanlon, W. F. Jones, T. S. King, W. J. Laird, C. Sharp, and N. Weinberg.

SECOND EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part A, Anatomy and Physiology.—H. E. Barrow, A. S. S. Brown, R. F. Corlett, D. E. Davies, J. Hatton, H. O. A. Meyer, E. P. Moloney, W. J. Pierce, J. E. Walker, and W. L. Webb.

Part B, Materia Medica, Pharmacy, Pharmacology.—M. M. F. Arthur, D. Cohen, O. Dawood, W. Emden, A. J. Goss, J. Graham, Catherine E. I. Greenshields, F. P. Irvine, Elvey I. Johnstone, D. Katz, Rebecca Katz, B. Kay, B. D. Knoblauch, E. A. Martinez, P. Strelitz, and R. S. Turner.

DIPLOMA IN PUBLIC HEALTH.

Doris M. Cassady, E. R. Peirce, and G. H. Potter.

DIPLOMA IN TROPICAL MEDICINE.

D. Basu, J. C. Cruickshank (recommended for the Alan H. Milne Medal), Winifred I. Doherty, J. Elsohn, R. N. Raja, and C. F. White.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia was held on March 26th, the President, Sir Humphry Rolleston, being in the chair.—The annual address was delivered by the President. He compared the numbers on the College list at the present time with those of 100 years ago. There were now 368 Fellows instead of 88, and 600 Members instead of 216. The licentiates now number 14,448, and there was one extra licentiate. He then read obituary notices of the ten Fellows who have died during the past year—viz., Dr. Robert Shingleton Smith, Sir Henry Davy, Dr. W. H. R. Rivers, Sir Edward Malins, Dr. Arthur Ransome, Dr. Cornelius Benjamin Fox, Sir James Galloway, Sir Norman Moore, Dr. John James Pringle, and Dr. Norman Dalton.—On the motion of Sir William Church the thanks of the College were given to the President for his address.—Sir Humphry Rolleston then vacated the chair and the College proceeded to the election of president. Sir Humphry Rolleston was re-elected, obtaining 61 votes out of 65.—Communications were received from the clerk to the Privy Council informing the College that the Seventh International Congress on Thalasso-Therapeutics will be held at Venice on April 9th–12th next; and from the Secretary of the Ministry of Health informing the College that the celebrations (in France) of the centenary of the birth of Pasteur will include a conference on leprosy, to be held at Strasbourg on July 28th–31st next.—The College authorised the presentation of an illuminated address to H.R.H. the Prince of Wales, President of St. Bartholomew's Hospital, at the celebration of the 800th anniversary of the foundation of the hospital.—The President then dissolved the Comitia.

Messrs. William Heinemann (Medical Books), Ltd., announce that commencing with Volume IV. (May, 1923), they have undertaken the publication of the *Journal of Neurology and Psychopathology.*

Mr. G. R. Anderson, M.B.E., F.R.C.S. Eng., senior honorary medical officer to the Southport Infirmary, has been placed on the Commission of Peace for the county borough of Southport.

LETHARGIC ENCEPHALITIS IN MANCHESTER.—During the past fortnight four cases of "sleepy sickness," all of which proved fatal, were reported in Manchester, the victims being seamen who had arrived at the Ship Canal docks from foreign ports.

HUNTERIAN SOCIETY.—The last dinner meeting will be held at Simpson's Restaurant, Cheapside, on Monday, April 9th, at 7.30 P.M. After dinner a discussion on Toxæmia of Pregnancy will be introduced by Mr. L. Carnac Rivett, in which Mr. Victor Bonney and Mr. A. Bourne are expected to participate.

RONTGEN SOCIETY.—A general meeting will be held on Tuesday, April 10th, at 8.15 P.M., in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C. 2, when Mr. Mortimer A. Codd, F.Ph.S., will read a paper on a New Method of Operating Induction Coils, followed by a demonstration of the apparatus.

THE LATE DR. G. C. PURVIS.—George Carrington Purvis, M.D., B.Sc. Edin., formerly medical officer of health for Grahamstown, died recently in that city. Dr. Purvis was Thomson Scholar and Falconer Fellow at the University of Edinburgh and had devoted much time and attention to the study of tropical diseases and to the ætiology of cancer. His son, who also studied at Edinburgh University, is now the government veterinary surgeon at Eldoret, Kenya.

QUEEN SQUARE HOSPITAL.—Sir Frederick Macmillan presided last week at the annual meeting of governors at the National Hospital for the Paralysed and Epileptic, Queen-square. The report of the board of management showed that, mainly owing to the fall in the cost of supplies and a substantial grant from the Hospital Combined Appeal, the hospital had more than paid its way during 1922. Funds are urgently required for a new out-patient theatre, an enlargement of the electrical department, and some essential improvements to the convalescent home at East Finchley.

SMALL-POX AT NELSON AND CLOWNE.—In the last week in March 7 new cases were reported at Nelson, 5 being members of one household, making a total to date of 37 cases. The health committee have decided to close day schools and Sunday schools for a month, and children are to be prohibited from attending kinemas. Many proposed public entertainments have been postponed. A large extension to the Infectious Diseases Hospital at Catlow has been erected.—The small-pox outbreak in the Clowne district of Derbyshire, which gave signs of abatement as a result of the large number of vaccinations, again shows activity, as last week five more cases were reported, making a total of 85 cases since last summer.

THE DIPLOMA OF PSYCHOLOGICAL MEDICINE.—The details of the first part of the sixth course of lectures and demonstrations for the Diploma in Psychological Medicine have now been announced. The course will commence at the Maudsley Hospital, Denmark Hill, S.E., on May 1st, with a series of eight lectures on the Anatomy of the Nervous System, by Sir Frederick Mott, lately pathologist to the London County Mental Hospitals, who remains to assist the Maudsley Hospital in an advisory capacity. Sir Frederick Mott's lectures will be on Tuesdays at 2.30 P.M.

On Thursdays, at 2.30 P.M., commencing on May 3rd, eight lectures will be delivered by Dr. Henry Devine on Psychology; and at the same hour on Fridays, and commencing on May 4th, eight lectures will be delivered on the Physiology of the Nervous System. Practical instruction and demonstrations will accompany each course, and the whole fee for Part I. separately is 10 guineas, the fee for any one series of lectures being 4 guineas. The second part of the course will commence in October, will deal with Symptomatology, Pathology, and Treatment of Mental Disease, and a more detailed syllabus will be published in due course. A composition fee can be paid of 15 guineas for the two parts. All inquiries should be addressed to the Director of the Pathological Laboratory at the Maudsley Hospital, and application forms, when obtained, should be returned with the appropriate remittance to the cashier, London County Council, County Hall, Westminster Bridge, S.E. 1. Medical men intending to take the course, who are introduced by the Fellowship of Medicine, can pay their fees and receive their tickets from the Fellowship on application to 1, Wimpole-street, W.

ROYAL NAVY MEDICAL CLUB.—The annual dinner will take place at the Trocadero Restaurant (Balmoral Room), Piccadilly Circus, London, W. 1, on Thursday, April 19th, at 7.30 for 8 P.M. Members who wish to be present are asked to inform the hon. secretary, Royal Navy Medical Club, 68, Victoria-street, S.W. 1, not later than seven clear days before that date.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ELECTION TO THE COUNCIL.—Five vacancies now occur on the Council of the College, Sir William Thorburn having died since the issue of the last notice; they will be filled by election on Thursday, July 5th, 1923. The following are the names of the candidates with the date affixed of admission to the Fellowship: Sir H. F. Waterhouse (1890), standing for re-election; Mr. James Berry (1885); Mr. J. H. Fisher (1893); Mr. H. J. Paterson, C.B.E. (1897); Mr. Sampson Handley (1897); Mr. T. P. Legg, C.M.G. (1897); Mr. Victor Bonney (1899); Mr. D. Armour, C.M.G. (1900); Mr. Percy Sargent, C.M.G., D.S.O. (1900); Mr. G. E. Gask, C.M.G., D.S.O. (1901); and Mr. G. Grey Turner (1903).

ABERDEEN DISPENSARY AND VACCINE INSTITUTION.—The annual meeting was held in the Town House, Aberdeen, on March 29th, Lord Provost Meff presiding. The annual report showed that the total number of cases treated in all departments during the year was 5544, compared with 3646 in the previous year. The number of patients treated at their own homes during the year by the general staff of the dispensary was 2344, compared with 1059 in the previous year, while the number of visits paid was 6644, compared with 2461 in 1921. The number of vaccinations performed during the year was 49, an increase of 13. The number of dental operations performed was 176, an increase of 42. The special ear, nose, and throat cases during the year numbered 366. The number of operations carried out during the same period was 103. During the year 76 persons applied for treatment at the ophthalmic department. In the department for the diseases of women 190 patients were treated. 21,735 prescriptions were dispensed. During the year Dr. John Johnston was appointed anæsthetist and Dr. Alex. Brown a district medical officer; Dr. Douglas R. Dugan was also appointed a district medical officer.

OXFORD MEMORIAL TO THE LATE SIR WILLIAM OSLER.—A final meeting of the subscribers to the Memorial Fund was held on March 15th at the University Museum, Oxford, Sir Herbert Warren, President of Magdalen College, presiding. The following proposals were submitted on behalf of the Committee.

1. The purchase of a bronze plaque of Sir William Osler, measuring 32 by 22 inches, a copy of that, by Vernon of Paris, made for the Medical Faculty of Maryland, this plaque to be hung in the University Museum.

2. The establishment of a fund for the foundation of an Osler Memorial Medal in bronze, to be awarded every five years to a graduate of the University of Oxford who has made some distinguished contribution to medical science, learning, or practice. This medal might be a reduced replica of the portrait plaque.

3. The remainder of the sum, together with any sums hereinafter added, to be called the "Osler Travelling Fund" for the propagation or acquisition of medical knowledge or for medical research, this fund to be invested and the interest utilised to assist teachers of the medical faculty to travel for the above purposes. It is estimated that the capital sum remaining for this purpose will be about £1700.

Sir Archibald Garrod stated that these proposals had the entire approval of Lady Osler, as well as of other friends from whom letters had been received; they were supported by Surg.-Major-General Sir Frederick Bradshaw, and adopted nem. con. The Executive Committee, which consists of Sir Herbert Warren (chairman), Sir Archibald Garrod, Sir Charles Sherrington, Prof. Arthur Thomson, Mr. A. P. Dodds-Parker (hon. treasurer), and Prof. J. A. Gunn (hon. secretary), was empowered to take steps to carry the proposals into effect and in particular to negotiate any arrangements with the University which may be found desirable. Any further subscriptions should be sent without delay to Mr. Dodds-Parker, 2, Holywell, Oxford.

ROYAL SUSSEX COUNTY HOSPITAL: REOPENING THE CLOSED WARDS.—A beginning has been made in reopening the wards of the County Hospital at Brighton, which for financial reasons were closed in October last. On March 27th 20 beds in the detached Jubilee Block were opened for the use of patients who cannot afford nursing home fees and yet are hardly suitable cases for the general wards of the hospital. Patients will be called upon to pay not less than £3 and not more than £4 per week. This sum will not cover the cost, but the John Howard Trustees have agreed to make up any deficiency there may be, as an experiment for two years. The reopening ceremony was performed by the Public Trustee, Mr. O. R. A. Simpkin, who said that the sum of £10,000 left by the late Sir John Howard would not, on present values, build a nursing or surgical home. The trustees therefore had approached the governors of the County Hospital for coöperation in carrying out the testator's wishes, and it was agreed that the trustees should redecorate and re-equip two wards of the hospital to be named the "John Howard" wards. The chairman of the governors, Mr. R. Ball Dodson, pointed out that these wards for people of moderate means were not in any way to be a rival to existing institutions. Those who occupied them must be able to convince the authorities that they were not in a position to bear the expense of a nursing home and a first-class surgeon.—Four days later, on March 31st, 30 beds in the main building were reopened in accordance with the arrangement with the Ministry of Health, the hospital thus qualifying for the grant of £3950 from the Voluntary Hospitals Commission. Thus 50 beds still remain closed, but it is hoped to reopen these by September.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, April 9th.

WAR: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1923–24.
Paper:
Squadron-Leader T. F. Rippon, R.A.F.: The Effects of Tropical Climate on Mental and Physical Efficiency.

Tuesday, April 10th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1923–24.
Paper:
Prof. F. Hobday: The Idiosyncrasy of Animals to Strychnine, Morphine, and Mercury.

Wednesday, April 11th.

SURGERY: SUB-SECTION OF PROCTOLOGY: at 5.30 P.M.
Paper:
Sir Charters Symonds: Nephrostomy for the Relief of Inoperable Recto-vesical Fistula.
Cases
Will be shown by Sir Charles Gordon-Watson, Mr. Lockhart-Mummery, Mr. Hamilton Drummond, Mr. Herbert Brown, and Mr. Donald Armour.

Thursday, April 12th.

NEUROLOGY: at 8.30 P.M.
Paper:
Sir Frederick Mott: Myasthenia Gravis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.
FRIDAY, April 13th.—5 P.M., Museum Demonstrations, Sir Arthur Keith: Madder-stained Specimens illustrating the Process of Bone Growth.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, April 9th.—10 A.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Addison: Surgical Wards. 3 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Dr. Pritchard: Medical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 2 P.M., Mr. Gibb: Eye Dept.
THURSDAY.—2 P.M., Mr. Bishop Harman: Eye Dept. 3 P.M., Dr. Scott Pinchin: Medical Out-patients. 3 P.M., Mr. Simmonds: Surgical Out-patients.
FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 2 P.M., Mr. Banks Davis: Diseases of Throat, Nose, and Ear. 3 P.M., Mr. Simmonds: Surgical Out-patients.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients and Out-patients, Operations, Special Departments.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, April 12th.—5 P.M., Mr. L. C. Rivett: Toxæmias of Pregnancy.

UNIVERSITY OF BRISTOL POST-GRADUATE DEMONSTRATIONS (in the Medical Theatre).
THURSDAY, April 12th.—3.30 P.M., Mr. A. J. Wright: Nasal Catarrh.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, April 10th.—4.15 P.M., Dr. D. E. Core: Some Points in the Differential Diagnosis of Pain.
FRIDAY.—4.15 P.M., Mr. W. R. Douglas and Mr. J. M. W. Morison: The Diagnosis and Surgical Treatment of Lesions of the Large Intestine.

ANCOATS HOSPITAL.
THURSDAY, April 12th.—4.30 P.M., Dr. H. Holmes: Demonstration of Pathological Specimens with Case Histories.

Appointments.

GARDNER, L. P. M., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Leith.
GOWERS, DOROTHY W., Assistant Medical Officer for East Ham.
SINCLAIR, NEIL F., F.R.C.S. Eng., Surgeon to Out-patients at the Evelina Hospital for Children.

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £200.
Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.
Bethlem Hospital, Lambeth-road, S.E.—Res. H.P. £25 per quarter.
Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. H.S. £150.
Bristol Royal Hospital for Sick Children and Women.—Hon. P.
Burton, Derbyshire, Devonshire Hospital.—Asst. H.P. £150.
Ceylon Medical College.—Professor of Physiology and Reg. £800.
Colchester, Essex County Hospital.—H.S. £200.
Delamere Forest, Cheshire, Crossley Sanatorium.—Asst. M.O. £250.
Derbyshire Royal Infirmary.—H.S. £200.
Gloucestershire Royal Infirmary and Eye Institution.—Surg.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. £50.
Hull and Sculcoates Dispensary.—M.O. £500.
Leicester Royal Infirmary.—Hon. Ophth. S.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. M.O. £250.
London County Mental Hospital Service.—Seventh Asst. M.O. £440.
Maidstone, Kent County Mental Hospital.—Asst. M.O. £350.
Maidstone, Kent County Ophthalmic Hospital.—Res. Surg. O. £750.
Manchester, Ancoats Hospital.—Radiologist. £300.
Manchester Royal Infirmary.—Res. Surg. O. Also Asst. Res. Surg. O. £250 and £200 respectively.
Manchester, St. Mary's Hospitals for Women and Children.—H.S. £50.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120. Sen. H.P. and H.S. £100. Also Asst. H.P. and H.S.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £500.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £150.
Rotherham Hospital.—Jun. H.S. £150.
Royal College of Surgeons of England.—Examiners.
Royal Naval Dental Service.—Dental Officers.
Royal Northern Hospital, Holloway, N.—Cas. O. £150. H.P. £100.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
St. Marylebone Dispensary, 77, Welbeck-street, W.—Hon. P. and Hon. S.
Stoke-on-Trent, Bucknall Infectious Diseases Hospital.—R.M.O. £500.
University College Hospital, Gower-street, W.C.—Res. M.O. £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S. 100 guineas.
York, North Riding Mental Hospital, Clifton.—Deputy Supt. £500.
The Chief Inspector of Factories, Home Office, Whitehall, London, S.W., announces a vacant appointment at Stillington (Durham).

Births, Marriages, and Deaths.

BIRTHS.

DEAN.—On March 26th, at Spilsby, Lincolnshire, the wife of Dr. L. T. Dean, of a daughter.
EDWARDS.—On March 23rd, at Felixstowe, the wife of H. Vernon Edwards, M.B., B.Ch., of a son.
MACKENZIE.—On March 28th, at Camden-terrace, Manningham-lane, Bradford, the wife of Colin Mackenzie, O.B.E., F.R.C.S., of a son.

DEATHS.

BURY.—On April 3rd, at Cloverley, Chinley, Hannah Louisa, beloved wife of Judson S. Bury, M.D., F.R.C.P., in her seventieth year.
CREAN.—On March 25th, at Queen-street, Mayfair, Major T. J. Crean, V.C., D.S.O.
HARPER.—On March 30th, in a nursing home, Charles John Harper, M.R.C.S., L.R.C.P., of Hendon-avenue, Finchley in his 67th year.
MILLIGAN.—On March 27th, 1923, at Cliftonville, Lytham, William Milligan, M.D., M.Ch., M.A.O., aged 64 years.
SAUNDERS.—On March 23rd, at College-road, Eastbourne, Henry Saunders, M.A., M.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

RESEARCH IN THE CALCUTTA SCHOOL OF TROPICAL MEDICINE.[1]

BY ROBERT KNOWLES, M.R.C.S. ENG.,
MAJOR, I.M.S.; PROFESSOR OF PROTOZOOLOGY IN THE CALCUTTA SCHOOL OF TROPICAL MEDICINE.

[AFTER referring to the difficulties encountered in the inception of the research scheme and the sum of Rs.1,80,000 he had collected to supplement the Rs.9,23,836 obtained by public subscription by Sir Leonard Rogers before he left India, totalling about £100,000 at the then rate of exchange, Major Knowles described the opening of work by four whole-time research workers as a result of action of the Endowment Fund Committee in the autumn of 1920, "in anticipation of sanction" by Government, and the completion of the scheme with its own hospital of 116 beds at a total cost of Rs.17,96,711 early in the following year.] He continued:—

The scheme now includes (1) the School of Tropical Medicine for post-graduate teaching and research; (2) the Institute of Hygiene with the Bengal public health laboratory; (3) six special research laboratories with whole-time workers and assistants, financed by the Indian Tea, Jute, and Mining Associations, the Indian Research Fund Association, and private benefactors; and (4) the Carmichael Hospital for Tropical Diseases, with its own out-patient department, to which cases of the special diseases under investigation in the research laboratories are admitted, while 600 more beds in the adjacent Medical College Hospital are also available for research purposes. Under Lieut.-Colonel J. W. D. Megaw, I.M.S., Director of the School and Professor of Tropical Medicine, team-work is here seen at its best, the patient being investigated as a matter of routine by the physician or surgeon, his stools examined for helminths, protozoa, and bacteria by the respective professors of those three subjects, a complete blood examination, including blood-cultures and Wassermann reactions, is made; any skin affection is studied in the skin clinic; while a special laboratory and out-patient department are soon to be housed in a new institute opposite the school for leprosy, for which an additional Rs.2,50,000 is now available. Yet another laboratory deals with kala-azar cases under Dr. L. E. Napier, there thus being no less than six special research workers and laboratories devoting their whole time to the investigation of kala-azar, leprosy, ankylostomiasis, dysentery, diabetes, and filariasis and elephantiasis, in addition to the general professorial staff of the school and laboratories, the total staff now totalling 33 research workers all qualified in medicine or science with unlimited clinical material.

Educational Work.

The teaching is purely post-graduate, the first to be fully organised in India, and includes first a six months' cold weather course for the Diploma of Tropical Medicine (limited to 50 selected applicants to allow of individual teaching, over 30 applicants having recently to be refused admission); secondly, a nine months' course in the Institute of Hygiene to prepare men for the university D.P.H.; and thirdly, during three months of the rainy season, for assistant and subassistant surgeons, with an examination for a school certificate. In addition to clinical teaching in the hospital and in special out-patient departments, the daily routine includes a lecture on one subject by the professor, illustrated by lantern slides prepared from plates in the library books and journals, by epidiascope projections, and by cinema films of motile protozoa and other life-cycles, each student being given a copy of a very full and detailed type-stencilled precis of the lecture, so that he can attend to the teaching without having to take notes. In 20 protozoology lectures, for example, 450 lantern slides and 15 cinema films, in addition to the use of the epidiascope, were shown; after a lecture the men proceed to the laboratory to study actual specimens under the microscope illustrating the lecture, and then to the practical classroom to study material of a similar nature. On the following day a different subject is taken, leaving the professor who lectured on the previous day free for research and preparation for his next lecture for the remainder of the week. The course lasts six months, against three in the London and four in the Liverpool School of Tropical Medicine, while the six additional research workers give similar instruction in their special subjects to supplement the systematic courses of the various professors. In the

[1] Abstract of a paper on the research programme of the school read at the annual meeting of the Assam Branch of the British Medical Association, Jan. 7th, 1923.

final examination for the diploma outside examiners assist and the standard in both written and practical work is so high that in the last D.T.M. only 19 out of 29 post-graduates passed, and no one has yet obtained honours.

Research.

Although work is now in progress in no less than 17 different departments of the school, the director has always insisted on coördinated and coöperative work, so that three or four departments commonly take part in any one piece of research as will appear from the following very brief outline :—

1. Work on kala-azar is being carried on by the whole-time worker, Dr. Napier, with the help of the entomologist, protozoologist, and pharmacologist. Napier's simple formaldehyde serum test having been placed on a firm basis, examinations of the peripheral blood for the parasites gave 20 per cent. positive, while cultures of the flagellate stage from the peripheral blood was shown to be an almost certain diagnostic procedure, and some 2000 spleen punctures were done without a single ill-result ; the disease was found to be more widespread in Bengal than was hitherto recognised. Sodium antimony tartrate continues to give good results, although stibenyl was very disappointing and dangerous, while important systematic work is being done on the difficult problem of the mode of transmission. Major Knowles having recently obtained an acute infection of a monkey experimentally by feeding on a fresh kala-azar spleen ; he thinks a sand-fly may prove to be the carrier.

2. Malarial treatment is being investigated by Majors H. W. Acton and R. N. Chopra,[2] and the value of quinidine in completely eradicating the resistant benign tertian and quartan forms when longer courses of quinine have failed is being confirmed, 10 gr. twice a day of quinidine sulphate in solution for three to six weeks giving 60 per cent. of absolute cures against 20 per cent. by quinine, while the former is also a cheaper drug, so an immense saving will be effected in India ; the still cheaper cinchona febrifuge is also very efficient. Spleen punctures in malarial cases have also furnished interesting results.

3. Protozoological and bacterial examinations are made in every dysentery case, a large majority proving to be bacillary in nature, and close investigations of the reactions of the stools by Knowles and Napier revealed that its estimation gives reliable diagnostic indications in the absence of the causative organisms—a most important discovery, which, with the well-established differences in the cellular contents of the stools, promises to enable a rapid diagnosis to be made by simple means apart from well-organised laboratories, which are few and widely scattered in the tropics. Under this head may be mentioned post-mortems on over 500 animals from the Calcutta zoological gardens last year, affording a wealth of intestinal flagellates, &c. Further, Majors Acton and Chopra have obtained poisonous amines from cultures on special media of Flexner as well as Shiga bacilli, and have made experimental tracings illustrating their toxic properties, which promise to throw much light on the nature and treatment of bacillary dysentery, while Flexner bacilli have been found in some sprue-like diarrhœas.

4. In cholera the two last-mentioned workers have isolated amino-acids and amines and produced choleraic symptoms in animals with them as well as tested their physiological actions with interesting results.

5. As regards dietetic diseases, lathyrism has been shown by Acton to be due to a poisonous amine produced during the germination of kesari dal (*Lathyrus sativus*), which has been isolated by the professor of chemistry, Dr. S. Ghosh, and its action tested by Chopra, while symptoms resembling those of lathyrism have been produced in monkeys. In epidemic dropsy another amine has been isolated from the form of stored rice which produces the symptoms, so this disease should also be preventable in future.

6. Ankylostomiasis is being closely investigated by the whole-time research worker in that subject, Dr. J. B. McVail,[2] who has worked out a simple, rapid, and very effective method of finding the ova, tested the effect of many agents on the larvæ, shown that the ova will survive septic tank treatment, and confirmed the value of carbon tetrachloride as a very cheap and easily used remedy.

7. Leprosy research has been continued by a whole-time worker, Dr. E. Muir, with valuable results, which will appear in the *Indian Journal of Medical Research*, and include pathological work, mapping out the first discovered lesions in 975 cases, and further confirmation of the value of recent advances in treatment with the extension by two of the number of oils which yield active soluble preparations.

8. Tropical skin diseases are investigated in a special department under Major Acton ; photographs and coloured drawings by the whole-time laboratory assistants in charge of that branch are being accumulated, together with cultures and microscopical examinations of the fungi, &c., found in the numerous cases, which promise in time to place this difficult and very confused subject on a clearer and firmer basis, while important work is also proceeding on tropical ulcer, which is such a serious cause of labour loss on Assam tea-gardens.

9. Indigenous drugs form the special field of investigation by Major Chopra, with the active help of the chemical department, these laboratories being the first adequately equipped for this purpose in India ; specimens of the best known indigenous drugs, including berberine and other reputed antimalarial drugs, are being collected and analysed, and their active principles are being investigated pharmacologically and therapeutically. It is hoped in time to ascertain which of the numerous remedies used by the ancient Indian systems of medicines are of value and supply cheaper and more efficient drugs than those now imported at great cost from Europe.

In order to ensure wide publicity to the various practical advances made by the Calcutta school, the publishers of the *Indian Medical Gazette* have generously extended considerably the pages of that long-established monthly journal, so that additional material may be published without curtailing the clinical columns. The remaining lines of research can only be mentioned ; they include whole-time laboratory work on filariasis, diabetes, and dysentery ; while the Hygiene Institute is doing important work in standardising water and food analyses for India, methods of clearing waters, &c.

This very condensed account of the activities of the Calcutta School of Tropical Medicine and Hygiene will suffice to show that it has already established a leading position among the medical research and post-graduate institutions of the Empire.

[2] THE LANCET, March 3rd, p. 454.

THE IRISH DISPENSARY SYSTEM.

THE conditions of work in the Irish dispensary service have long excited uneasiness both among doctors and social workers. Conditions are in such a state of rapid flux in Ireland that drastic change may well be hoped for, and Dr. T. Hennessy has taken the opportunity to make a forcible protest in the Royal Academy of Medicine in Ireland. The subject is dealt with in the current issue of the *Irish Chemist and Druggist*, a new journal edited by a medical man, Dr. James A. Walsh. It is admitted that the dispensary houses are cold, cheerless, and often smoky hovels, where poor people and young babies may have to wait hours in wet clothes for their turn to see the doctor, who has himself to discharge the triple duties of medical adviser, nurse, and dispensing chemist. This system is disliked as much by the doctors as by the chemists, for it is common knowledge that the medical officers are obliged to stay in the service long after they wish to retire on account of the miserable rate of pension offered. The situation has been rendered worse by the amalgamation of the Irish workhouses, which has resulted in abolition of the district hospitals and in a number of urban and rural districts with populations of 20,000 to 30,000 being left without any hospital beds. The county hospitals are not only remote, but generally ill-equipped into the bargain. Nothing short of legislation can deal with so fundamental a disorder.

INSTRUCTION IN SEX MATTERS.

To the Editor of THE LANCET.

SIR,—With reference to the query of "F. C." in THE LANCET of Jan. 20th I would state that an excellent book for the purpose is "Sane Sex Life and Sane Sex Living" by H. W. Long, M.D., Capt. M.R.C., published by Richard G. Badger, Boston. This book is sold only to physicians, or under their order, to comply with our grandmotherly legislation.

I am, Sir, yours faithfully,

A. W. HENZELL.

St. Stephen's College, Annandale on Hudson, N.Y.,
Feb. 26th, 1923.

ST. MARY'S HOSPITALS, MANCHESTER.

To the Editor of THE LANCET.

SIR,—In your review of Dr. I. W. Bride's interesting History of St. Mary's Hospitals, Manchester, you state it is not clear as to what was the ultimate fate of the Quay-street Hospital, Manchester. At the time of the removal of St. Mary's Hospital, I was secretary of Manchester Children's Hospital, Pendlebury, and Gartside-street, Manchester, and as my board were rebuilding the out-patient department, we rented the old St. Mary's Hospital in order to carry on the out-patient work. After we had vacated the premises they were, I believe, demolished.

I am, Sir, yours faithfully,

H. J. EASON.

Harrow-road, London, W., March 31st, 1923.

RAT CAMPAIGN IN SALFORD.

THE Superintendent of the Lighting and Cleansing Department of Salford in a report states that under the Rats and Mice Destruction Act of 1919 something like 1500 visits have been made to buildings frequented by rats in the borough. Of 11,576 poisoned baits laid, 4551 were taken, and in addition 3133 rats have been caught by traps, dogs, or ferrets. In 12 months the port sanitary authority treated 140 vessels in port for rat destruction resulting in a total catch of 6812, while more than 3000 were trapped in the dock-sheds and warehouses. Frequent and periodical "drives" of rats in the depôts and corporation tips have diminished the number of rats to a remarkable extent. When information is received as to the presence of rats an investigation at once is made with satisfactory results.

THE CONTINENTAL ANGLO-AMERICAN MEDICAL SOCIETY.

BEFORE the war the number of British and American practitioners established in the health resorts of Europe and Northern Africa was increasing year by year, and a society formed as a bond of union flourished. This Continental Anglo-American Medical Society arranged an annual dinner in Paris and issued from year to year a corrected list of members in order to enable scattered practitioners to keep in touch with each other, especially with a view of knowing to whose care patients might be safely recommended when changing from one resort to another. Dr. Robert Turner was the diligent hon. secretary and treasurer of the Society, acting with the help of an executive committee of eight, representing different areas. The circumstances of the war, subsequent changes in economic conditions, and the stiffening of the ordinances regulating practice by foreigners have profoundly altered the outlook of practice abroad since 1914, and in reply to a circular sent out last November Dr. Turner received 32 answers—13 informing him that the members written to had either died or retired from practice, 14 in favour of the Society being dissolved, and only 5 in favour of its continuation. It has therefore been decided to dissolve the Society, the sum in hand, amounting to about Fr.500, being handed over to the British Hertford Hospital in Paris. We confess to considerable sympathy with the minority who desired continuance, and have little doubt that, if they choose to form the nucleus, the opportunity of further association will arise. Practitioners resident abroad stand in particular need of such mutual help and support.

LUNATIC ASYLUMS AS SPECIAL HOSPITALS.

Dr. J. R. Lord, in a recent lecture which has been reprinted[1] expresses frankly and with some force his view of the difficulties with which an attempt to reform the lunacy administration must contend. The first of these is the problem of reconciling the liberty of the subject with timely and adequate mental treatment. The Lunacy Act of 1890, regarded as a measure for preventing wrongful detention, is admirably framed (and, indeed, it may be said that critics who attack the present "system" from this side are attacking its most invulnerable point). But this Act, providing, as it does, that no person shall be detained before or after he is sufficiently deranged to be certified, ignores the patient's welfare at two stages of his illness when care and treatment are of the utmost importance—namely, the stages of onset and recovery. Its whole essence and object, in fact, is not therapy, but justice.

Institutions for the treatment of incipient cases on a voluntary basis are being demanded loudly, and a few exist. Dr. Lord's view is that these "within a few years will be tainted places, just as the mental hospitals are in the public estimation. Other and still more camouflaged institutions will then be called for." He would therefore utilise existing institutions for this, as well as their present, purpose, and amend, or rather revolutionise, the lunacy laws in conformity with this object. The three propositions in which the mechanism of this change is outlined are necessarily incomplete; their underlying principle is the right of voluntary admission to State asylums without formality.

The success of such a plan presupposes the removal of the existing prejudice against asylums. This is the second difficulty, and the greater. "Only a bold attempt to teach the rising generation better ideas regarding insanity will remove it. The educational code of our national schools should decree a course on both mental and physical hygiene for senior pupils, and children should all be taught that: 1. Mental disorders are as common and as natural as common colds. 2. That mental and physical hygiene are one and the same problem, and that such terms as 'run down,' 'fed up,' and 'need a change' are descriptive of mental exhaustion, and that insanity is only a mental breakdown of a more severe character. 3. That mental hospitals are merely special hospitals for the treatment of severer forms of mental complaints. . . . 4. That superstitious views regarding insanity belong to the past. . . ." No one who believes the third article of this creed, and the majority of common-sense people do so, will quarrel with this, or deny the ultimate value of its effect, although its feasibility is another matter. An earlier and more promising start might be made by considerate instruction of the relatives of existing patients by the medical officers in charge of them. It is these people, who, by insisting on secrecy—the virtual disappearance of an insane person from the land of the living—create in any given generation the atmosphere of distrust and horror which surrounds the asylums.

People in the early stages of insanity, particularly melancholia, often do not consult doctors, and their relatives do not recognise that they are insane. Universal early treatment will only come when the general public understands something of the nature and aspects of these disorders.

[1] Lunacy Law and Institutional and Home Treatment of the Insane, being the Final of a course of Lectures on Psychiatry for local secretaries of Mental Welfare Associations, delivered at Horton Mental Hospital, Epsom.

COLONIAL HEALTH REPORTS.

Public Health in the Turks and Caicos Islands.

THE Turks and Caicos Islands (writes Mr. G. Whitfield Smith, the Commissioner and Acting Judge, in his report for 1921) lie between 21° and 22° N. latitude, and 71° 50′ and 72° 50′ longitude, and are therefore just on the edge of the tropics. The two groups are divided by a channel 21 miles in width, and the entire area is stated to be 166 square miles. The islands are distant, about 720 miles from Bermuda on the north, about 450 miles from Jamaica on the south-west, and about the same distance from Nassau, Bahamas, on the north-west. The climate is equable and healthy and rarely unpleasantly hot, owing to the strong and never-failing sea breezes. The average temperatures taken from the records of five years discloses a maximum of 90° and a minimum of 61·5° F. The rainfall for 1921 was 26·40 inches. The few cases of malaria which occur from time to time, chiefly in the island of North Caicos, and the origin of which can usually be traced to the neighbouring republic of Haiti, are of the mildest description. There are no freshwater ponds, and inhabitants of the settlements at Grand Turk, Salt Cay, and Cockburn Harbour depend entirely on rainwater tanks with which most houses are provided. Scattered throughout the islands are wells of more or less brackish water, in most cases potable by those accustomed for generations to water of this character. The estimated population at Dec. 31st, 1921, was 5612. The white population, numbering 210, is composed almost entirely of the descendants of Bermudians. The birth-rate in 1921 was 40·5 and the death-rate 19·5 per 1000. A mild outbreak of alastrim, introduced from Santo Domingo and Haiti, occurred during the year, but there was no death from the disease. The Manning Hospital (opened in October, 1918), affording accommodation for six patients in the public wards and two in the private wards, possesses a well-equipped operating theatre and is up to date in other respects.

Public Health in the Uganda Protectorate.

It is stated in the Uganda Protectorate report for 1921 that during the year there were 62 cases of blackwater fever with 15 deaths, as compared with 56 cases and seven deaths in 1920. At the venereal treatment centre at Mulago, which was opened at the end of the previous year, there were over 36,000 attendances for treatment. Observations taken at Entebbe show that the average rainfall for the last 22 years has been 58·26 inches: the average temperature for the last 18 years, maximum 78·46°, minimum 62·76° F.; and the mean daily sunshine 6 hours 34 minutes. The climate of the Protectorate as a whole, though pleasant, cannot be considered healthy for Europeans. European children, as a rule, thrive in infancy, but considerable risk is attached to bringing them out when they are over two or three years old, as they are liable to attacks of malaria and the resultant anæmia. The health of adults depends mainly on their mode of life, and with care constitutional health should not be impaired, but if physical fitness is maintained the altitude and proximity to the Equator combine to produce nervous strain after prolonged residence. Outdoor manual labour is dangerous for Europeans, and on plantations a manager's or owner's duties are for the most part supervisory. The favourite localities for European plantations are the Buganda Province (particularly the Mengo and Mubendi districts), the Toro district of the Western Province, and the Bunyoro district of the Northern Province. There are a few estates in Busoga (Eastern Province), but this area is not so popular.